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ORIGINAL CONTRIBUTIONS

	PAGE
Metastatic Carcinoma of the Central Nervous System. By N. W. Winkelman, M.D., and John L. Eckel, M.D.....	1, 133
Endocrinology and Psychiatry; Some Problems. By Prof. Dr. med. and phil. M. Serejski.....	15
Clinical Contribution to Drug Addiction: The Struggle for Cure and the Conscious Reasons for Relapse. By Lawrence Kolb, M.D.	22
The Functional Psychoses as an Evolution of Psychic Impotency. By John Holland Cassity, M.D.....	105
Thé Relation of Occupation to Migraine. By Wm. Allan, M.D.	131
Interpretation in Neuropathology. By A. E. Taft, M.D.....	217
The Intraventricular Treatment of Paresis. By Dr. Cestan, Drs. Riser and M. Pérès.....	227
Rumination in Relation to Personality Development. By Philip John Trentzsch, M.D.	245
Familial Form of Encephalitis Periaxialis Diffusa. By Armando Ferraro, M.D.	329, 479, 616
Medullary and Pontile Syndromes. By Rubin A. Gerber, M.D..	355
Segmental Trophic Edema of Cerebral Origin. By Alfred Gordon	381
Brachial Plexus Obstetrical Paralysis and Report of a Case. By Vincent Giliberti, M.D.....	449
The Evolution of an Encephalitic Dystonia into a Hypertonic-Akinetic Syndrome Resembling Wilson's Progressive Lenticular Degeneration. By S. Brock, M.D., and S. Katz, M.D.....	460
Lesions of the Epiconus. By Bernard J. Alpers, M.D.....	468
The Rôle Played by the Cutaneous Senses in Spatial Perceptions. By William Malamud, M.D.....	585
Amyotrophic Syphilitic Meningomyelitis. Report of Two Cases with Argyll-Robertson Pupils. By Theodore T. Stone, M.D.	595
On a Social Approach to Neurotic Conditions. By Hans C. Syz, M.D.	601

Society Proceedings:

New York Neurological Society.....	44, 149, 390, 499, 621
Boston Society of Psychiatry and Neurology.....	59
The Washington Society for Nervous and Mental Dis- eases	158, 259
The Missouri-Kansas Neuropsychiatric Society.....	636

Current Literature:

Vegetative Neurology	64, 165, 264, 407, 511, 644
Sensori-Motor Neurology	72, 179, 280, 413, 527, 663
Symbolic Neurology	81, 190, 301, 424, 549, 683
Heredity: History, General Neurological Problems, etc....	639

Book Reviews	90, 201, 318, 434, 568, 699
---------------------------	-----------------------------

Obituaries:

Charles Foix	102
C. Da Fano	102
Henry Waldo Coe	103
Anton Heveroch	103
Samuel Gilbert Webber	212
Louis Schnyder	584
Henry Mills Hurd	706
Vincent Giliberti	717
Gustav Fritsch	718

Notes and News	104, 215, 328, 719
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The Journal

OF

Nervous and Mental Disease

An American Journal of Neuropsychiatry, Founded in 1874

ORIGINAL ARTICLES

METASTATIC CARCINOMA OF THE CENTRAL NERVOUS SYSTEM *

By N. W. WINKELMAN, M.D.

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AND

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According to available statistics, slightly over fifty per cent of all cancers eventually metastasize. While metastasis to the central nervous system is relatively infrequent (4.77 per cent) (1), it must be kept in mind in explaining many obscure nervous and mental symptoms. Krasting (2) in a series of 1078 cancer cases, representing over twelve thousand necropsies, found thirty-nine which metastasized to the nervous system. It is recognized that cancer of certain organs has a predilection for metastasizing to the nervous system.

Approximately one-half the metastases arise from primary cancers of the breast, lung and prostate. The uterus is next in the list of frequency, but represents a much smaller percentage than the first three. The remaining metastatic growths come from the various organs of the body. No organ is exempt, but they are rare from the bladder.

Metastasis may occur as a solitary tumor (in about one-third of all cases, Gallavardin and Varay (3), or, which is more frequent, as

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multiple tumors. Buchholz (4) has reported one case in which over one hundred distinct tumors of the brain were found. Hassin and Singer (5) and Lewis (6) have also reported extremely large numbers of small carcinomata in the brain. Any part of the brain or cord substance, their coverings or the vessels may be involved. It is remarkable that metastasis within the spinal cord substance is extremely rare, there being only seven available cases in the literature (Levin 1).

The time of occurrence of a metastatic lesion varies with the type of tumor and the organ involved. Surgeons recognize that after removal of a breast or prostate, the patient may be symptom free for years before metastatic lesions occur, especially in the nervous system. The dura alone may be involved by the process, the so-called pachymeningitis carcinomatosa (Westenhofer (7), Dahmen (8), Lissauer (9)), or the pia-arachnoid, called meningitis carcinomatosa, (Seifert 10), Saxer (11), Schwarz and Bartels (12), or the perivascular lymph spaces, or the nervous substance itself.

Considerable discussion has centered about the method of dissemination of cancers to the nervous system, several channels being possible; mostly through the lymphatics or blood stream, or both, or by direct extension. While the continuous permeation theory of Handley (13) will explain neighborhood involvement, it is quite insufficient to explain metastases from distant parts, particularly from the abdominal and pelvic organs to the brain. Lymph emboli appear necessary to explain the dissemination at a distance. It is now almost universally believed that when lymph channels carry the cancer cells the meninges are more likely to be involved (Kaufman 14). According to Schmidt, (15) many of the lymph borne cell emboli lodge in the small vessels of the lungs, the majority becoming encapsulated and rendered harmless; while others invade the small vessels, and become the source for general metastatic lesions through the blood stream. The endophlebitis carcinomatosa theory of Goldmann (16) may be another method by which cancer cells are spread at a distance.

Retrograde transportation of cancer cells, first emphasized by Von Recklinghausen, (17) and later confirmed by others, and recently well described by Hassin, (18) as a frequent means of metastases, occurs especially in all organs having a venous pulse. Abnormal connections between the cardiac chambers may permit the passage of a large emboli to the aorta, as in a patent foramen ovale, known as the paradoxical embolism of Zahn. (19)

Tumor cells in the blood or lymph vessels may be destroyed by antagonistic substances, but this is not yet fully proven. In both

lungs and lymph nodes there is much more invasion by cancer cells than resultant metastases. It is a fact that some chemical or mechanical change takes place in both these locations to retard further growth and spread of the cells. Serological studies of the blood have thus far failed to demonstrate in the serum of animals any natural or immune substances capable of destroying cancer cells.

Many theories are advanced to explain why some organs are more frequently involved than others, but no definite conclusions are available. Ewing (20) feels it is largely a circulatory affair, but cites some exceptions to that theory.

The following is a brief survey of our cases, grouped according to location of the primary tumor:

BREAST GROUP

Case I. Summary: Primary cancer of the right breast, with metastases to the vertebrae, pelvis, femur and large nodular tumors on the under surface of the dura, especially over the left motor area.

A. McD., a white woman of seventy-five, was admitted to the Philadelphia General Hospital January 14, 1925, service of Dr. Carnett, and died March 6, 1925. She gave a history of a lump in the right

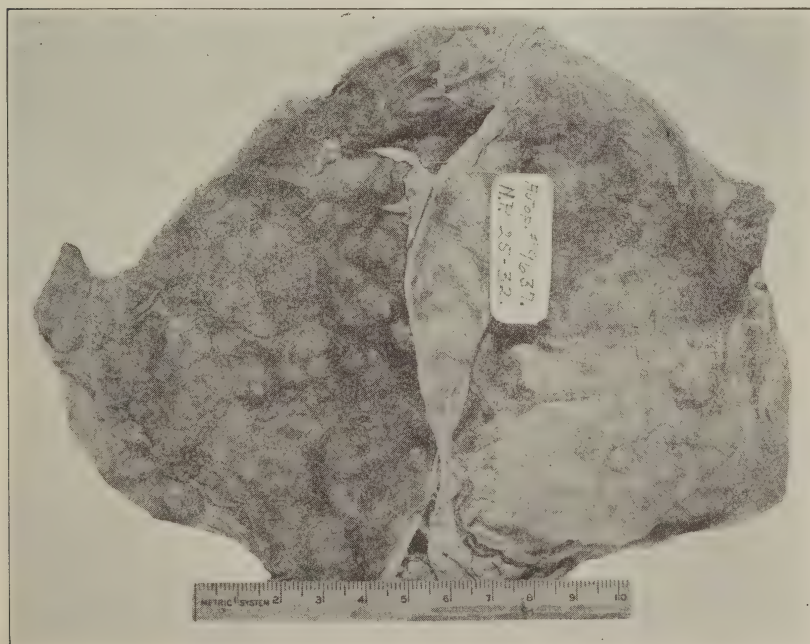


FIG. 1 (a). Carcinomatous nodules of dura.

breast for about one year. She had been married for twenty-two years, but had never been pregnant. In November, 1924, she developed ulcers on the right thigh which soon became gangrenous. On admission the right breast showed a nodular tumor, with retraction of the nipple. The right axillary glands were enlarged. One of these was removed for diagnosis and found to be cancer. Roentgenographic examination showed areas of involvement of the vertebrae in the midthoracic, lower dorsal and lower sacral regions. The pelvis and right femur were also involved. Microscopical examination of some of the tissue of the ulcer of leg



FIG. 1 (b). Microscopic picture of nodules.

showed it to be cancerous. On March 4, 1925, she suddenly developed a right hemiplegia with pronounced bulbar symptoms, tremor of the right side and motor aphasia. The blood Wassermann was negative. The urine, blood chemistry and blood counts were normal. She died two days after the onset of the hemiplegia.

At necropsy the primary breast tumor with extension to the right axillary glands was found. Metastatic lesions of the vertebrae, pelvis and femur were noted. There were also found many button-like nodules attached to the under surface of the cerebral dura, more pronounced over the left hemisphere than the right. The skull over the left hemisphere was also involved by a nodular mass. The brain itself, aside from

marked edema and slight depression from the tumor masses, showed nothing abnormal. Microscopic examination showed a primary adenocarcinoma of the breast with metastatic dural nodules. The brain substance was uninvolved.

Case II. Summary: Primary cancer of the breast with multiple metastatic nodules in the brain.

B. M. W., a white woman of thirty-seven was admitted to the Philadelphia General Hospital February 24, 1924, service of Dr. Carnett,

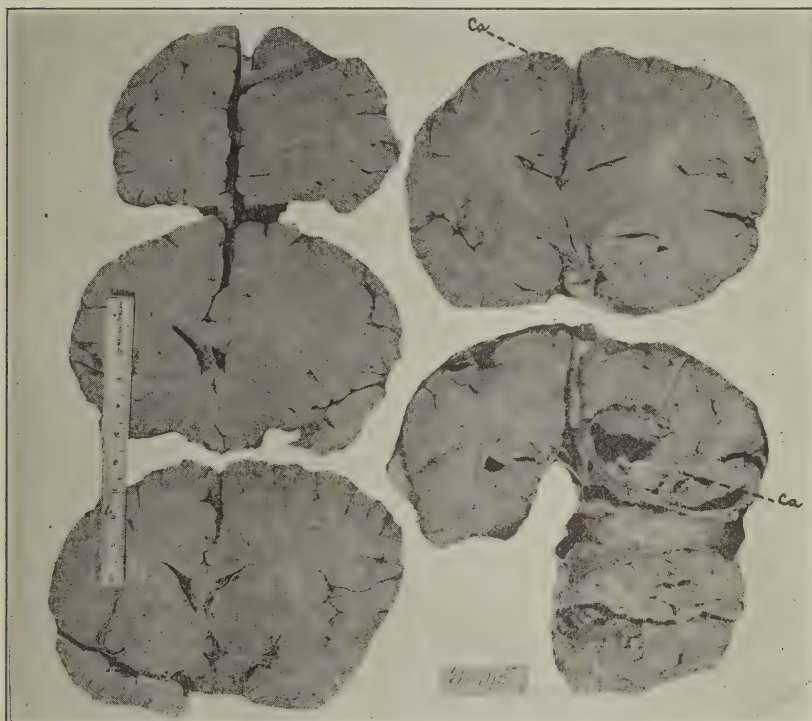


FIG. 2 (a). Carcinomatous tumors (Ca) in brain substance.

and died August 5, 1924. In April, 1923, a tumor was removed from the right breast. In October, 1923, she complained of pain in the head. During the winter of 1923-24, she noticed a lump in the other breast, which later became painful. In February, 1924, she suddenly became delirious and complained of severe occipital headache and dimness of vision. Neurological examination revealed double ptosis; the pupils were dilated, irregular, slightly unequal and were fixed. There was marked choking of both discs. The retina of the right eye revealed hemorrhages. The spinal fluid was clear and contained no abnormal

constituents. The Wassermann reaction in both blood and spinal fluid was negative. Some time after admission she developed a right astereognosis and a right hemiparesis. There was a double Babinski with subjective complaint of numbness in her right upper limb. After a few weeks she became blind. Roentgenologic examination of the head at this time was negative. She showed progressive mental deterioration, failed physically and died.

At autopsy there was noted a scirrhous carcinoma of the left breast

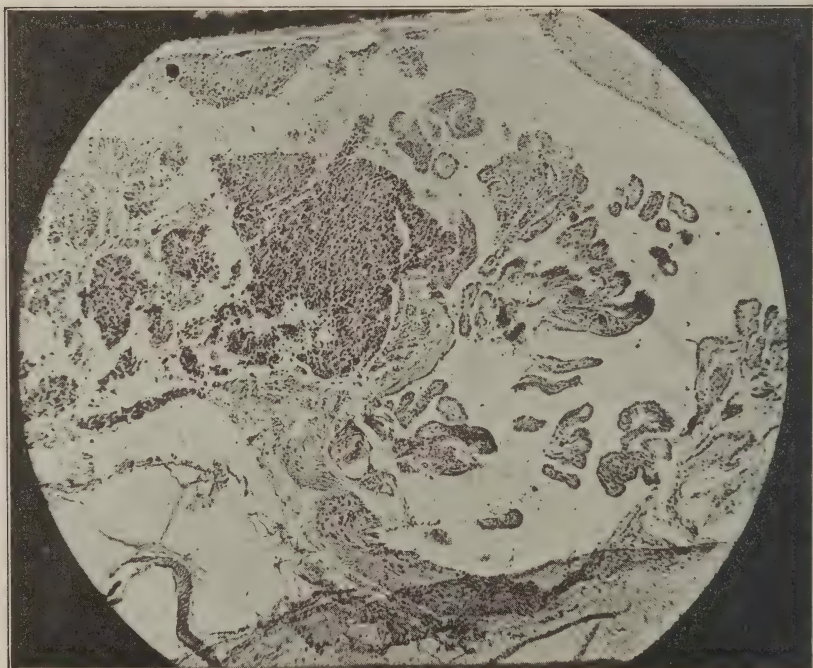


FIG. 2 (b). Nodule in choroid plexus.

(right breast had been amputated). Metastatic lesions were present in the brain. Fig. 2. They were located in the left paracentral lobule, right thalamus, extending downward into the subthalamic region and the midbrain; in the posterior part of the right occipital lobe, and the corpus callosum. Microscopic examination showed the tumor masses to be composed of active proliferating epithelial cells, arranged perivascularly for the most part, causing necrosis of the nerve tissue between. The cancer cells also invaded the pia-arachnoid directly over the tumor masses. The cerebellar pia-arachnoid and the choroid plexus in the fourth ventricle were invaded by the tumor cells. [Fig. 2(b).]

Case III. Summary: Primary cancer of the breast with metastases to the lungs, one rib, and the lymph nodes about the carotid vessels. The blood vessels of the brain contained cancer cells.

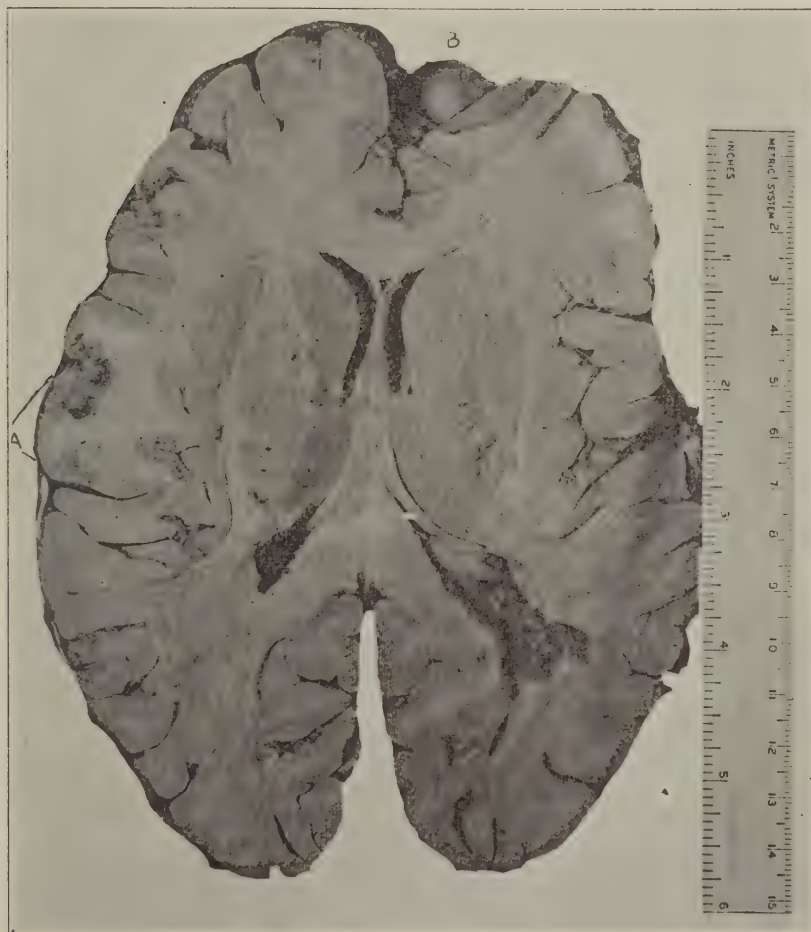


FIG. 3 (a). Shows petechiae at "A." A similar area at "B" was removed for microscopic study.

B. C., a white woman of fifty-four, was admitted to the Philadelphia General Hospital May 4, 1923, service of Dr. Potts, and died in eight days. She was picked up on the street, wandering about in a dazed condition. Upon admission to hospital she could give no connected account of herself. It was learned that she worked in a shirt factory on the day of admission but had not been well for about three months. She had complained of double vision, thick speech and weakness of the

right face. Both breasts had been removed, one in February, 1918, and the other some time later. There was no evidence of local recurrence but there were some enlarged glands along the carotid vessels. It walking she staggered to the left. The left pupil was larger than the right; both reacted sluggishly. The deep reflexes were present and normal. Plantar stimulation produced flexion on the left and extension on the right. The legs were very sensitive to pressure. While in the hospital she had a series of convulsions, associated with twitching

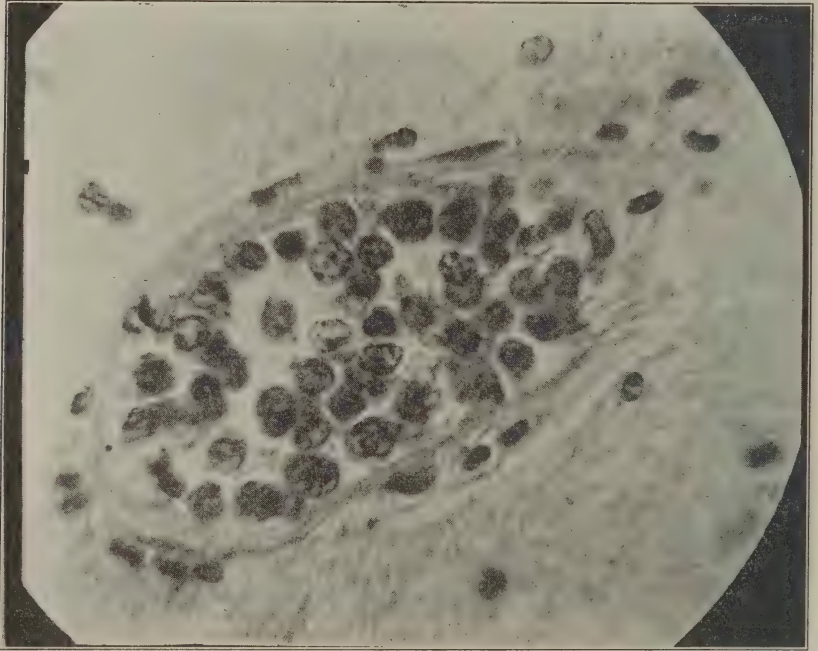


FIG. 3 (b). Cancer cells within blood vessel.

of the right side of face. Her sphincters were intact. Lumbar puncture revealed a clear fluid, under normal pressure. The Wassermann tests, both blood and spinal fluid, were negative. The urine showed a trace of albumin. The blood chemistry was normal. Some days after admission she became stuporous and died. The twitching of the right side of the face continued to her death; epilepsy partialis continua.

At post mortem petechial hemorrhages of the brain, especially of the left motor area for the face and arms and the right frontal area were found. [Fig. 3(a).] Microscopically the pia was everywhere infiltrated with lymphocytes, mostly perivascular. A moderate degree of arteriosclerosis was present. The blood vessels throughout the brain, especially the smaller ones, contained cancer cells. [Fig. 3(b).] In the basal

ganglia and midbrain the vessels were "collared" by cells of the lymphocytic type. In the left lower motor zone the cancer cells had perforated the vessel wall and extended into the nervous tissue. Metastatic nodules were present in the lungs and in one rib.

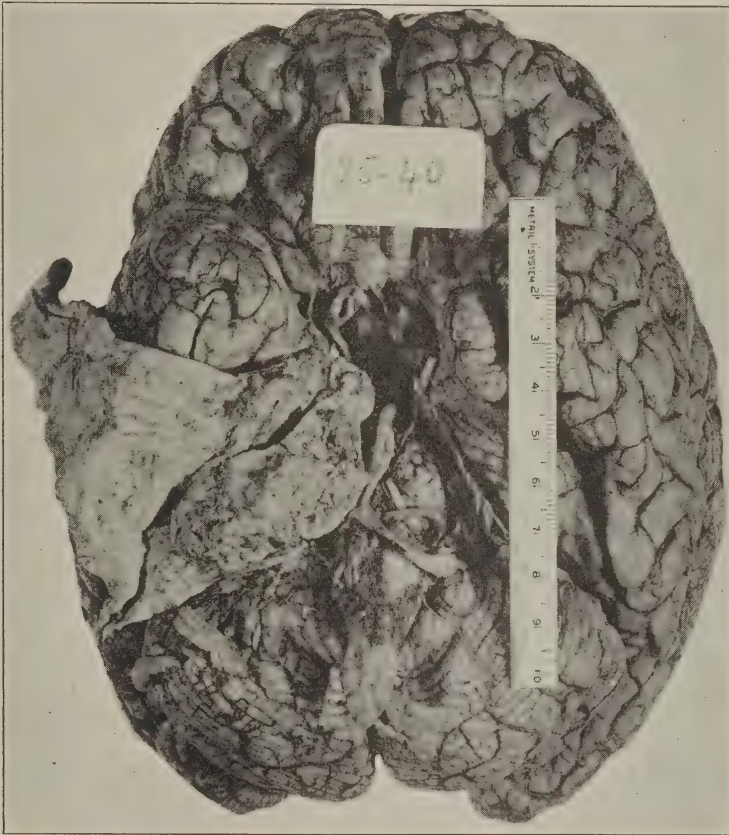


FIG. 4 (a). Carcinomatous tumor in right cerebello-pontile angle.

Case IV. Summary: Primary cancer of the breast with metastases to the cerebral dura of the right middle fossa involving the fourth to the twelfth cranial nerves, inclusive.

E. B., a colored woman of sixty-one, was admitted to the Philadelphia General Hospital February 12, 1925, service of Dr. Carnett, and died one month later. She had had twelve children and four miscarriages. In March, 1923, she noticed a lump in the left breast. In August, 1923, the axillary glands became enlarged. In November, 1924, she developed paralysis of the right side of the face. A short time later

the right sixth nerve became involved. Following this she developed cough and dyspnea. Later there was difficulty in swallowing and occasionally food would regurgitate through the nose. In one year she lost thirty pounds. In February, 1925, both optic discs showed swelling. Neurological examination at this time showed involvement of the fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh and twelfth cranial nerves on the right side, with weakness of the right arm. The tendon reflexes were all present and normal. In March, 1925, she had a convulsive seizure, which began in the right arm. She became stuporous and died from hypostatic pneumonia. The blood Wassermann was

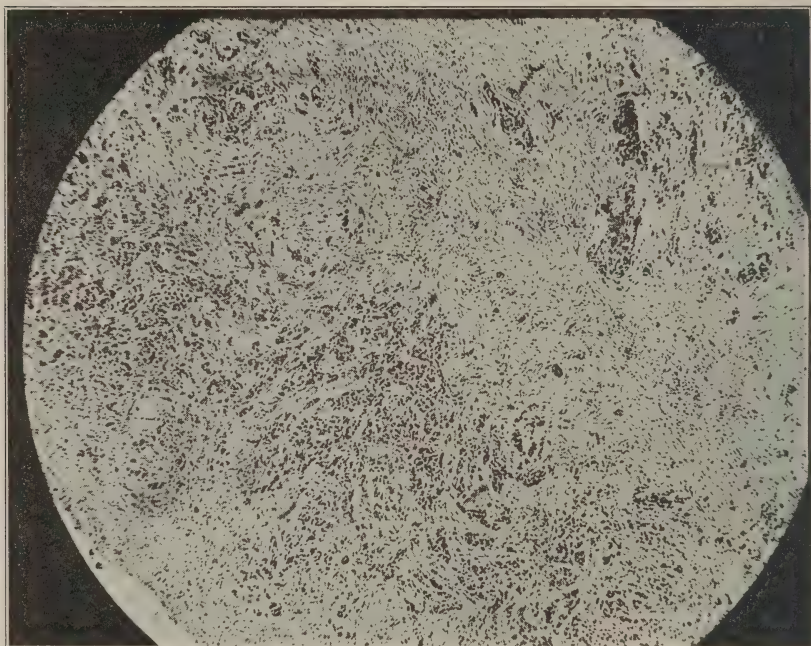


FIG. 4 (b). Microscopic appearance of tumor.

negative. There was a trace of albumin in the urine. The blood chemistry was normal.

At necropsy a tumor of the breast with metastatic nodules to the axillary, mediastinal and abdominal lymph nodes and to the lungs and the liver were found. Microscopically the breast tumor was a squamous cell carcinoma. The brain [Fig. 4(a)] showed a nodular growth invading the dura of the under surface of the right temporal lobe, extending backward to the anterior edge of the cerebellum and occupying the right cerebellar pontile angle, compressing all the cranial nerves in this region. The tumor mass was adherent to the anterior edge of the

cerebellum, but not to the under surface of the temporal lobe. In the left lateral ventricle the choroid plexus contained a nodule which proved to be cancer. The ventricles were not greatly dilated. Microscopically [Fig. 4 (b)] the tumor showed the characteristics of the primary growth and involved the dura, the choroid plexus and the pia-arachnoid surrounding the anterior cerebellar margins.

Case V. Summary: Primary carcinoma of the breast with metastasis to the left cerebellar fossa.

F. V., a white woman of forty-seven, was admitted to the University of Pennsylvania Hospital, neurosurgical service of Dr. Frazier, January 5, 1926. Her breast had been removed for carcinoma four years before. She made a good recovery and at the time of admission there were no signs of local recurrence. Late in 1925 she began to complain of headache. Later there developed general weakness and attacks of vomiting. Neurological examination upon admission showed both discs to be slightly swollen. She had marked occipital headache and frequent vomiting spells. There was slight cerebellar incoördination on the left side. A diagnosis of left cerebellar tumor was made. Operation, January 12th, by Dr. Frazier revealed a firm, well defined tumor in the left posterior fossa, which was removed intact. It measured $3 \times 3\frac{1}{2}$. It had compressed the left cerebellar lobe. Microscopic examination showed it to be an scirrhous carcinoma. The patient made a good recovery.

Case VI. Summary: Primary carcinoma of the right breast, with metastases to the left breast, auxiliary lymph nodes, the pleura, the lungs, liver, spleen, bone marrow and cerebral dura.

M. B. F., a white woman of seventy-four, was admitted to the New York State Institute for Malignant Diseases, Buffalo, Dr. B. T. Simpson, Director, September 9, 1921, and died October 4, 1922. Three years before admission she observed a lump in the right breast and later in the left breast. Shortly thereafter a mucous discharge appeared from the right breast. She would not consent to operation. Radium treatments were used without benefit. All laboratory tests were negative. Outside of slight irritability and headache during the latter months of her life, there were no neurological signs. She lost weight rapidly, and died.

Necropsy showed a scirrhous carcinoma of both breasts, the axillary glands on both sides were invaded, as were the pleurae. The pleura presented typical cancer lymphangitis, with involvement of the interstitial tissue of the lungs. There were nodules in the capsule of the liver and in the spleen. The vertebrae in places were also involved. A large nodule was found in the cerebral dura, in the anterior part of the left middle fossa, which, on section, presented the characteristics of the primary cancer of the breast.

Case VII. Summary: Primary carcinoma of the right breast, with metastases to the axillary lymph nodes, the skin, pleura, mediastinal, and retroperitoneal lymph nodes, vertebrae, skull and multiple nodules to the dura.

W. B., a woman of seventy-five, was admitted to the Philadelphia General Hospital August 15, 1925, service of Dr. Carnett, and died May 7, 1926. A lump had been present in the right breast for several years. The only complaint she had made was vague pains through the body at times. On admission the right nipple was retracted; there was a large mass in the breast and the axillary glands were involved. Mentally she was considerably deteriorated. Roentgenograms revealed much of the skeleton invaded by metastatic growths. There were many nodules in the skull. In December, 1925, the right breast became ulcerated. In March, 1926, she became very dull and drowsy and slept the greater part of the time. From then on she failed rapidly and died.

At necropsy there were noted flat, light yellow or brownish nodules scattered over the upper surface of the dura, more marked over the left side. These areas were not more than 0.5 cm. in diameter and for the most part averaged about 1 mm. in thickness. The cranial vault was softened in places as a result of the cancer lesions. Metastatic lesions were also found in the skin, mediastinal and retroperitoneal lymph nodes and vertebrae. Microscopic examination of the dura showed scirrhous carcinomatous nodules lying on the dura and many small nodules within the dural meshes. The brain itself, aside from arteriosclerosis and a few small areas of softening, showed nothing of moment.

DISCUSSION

In this group of seven cases it is to be noted that the ages of the patients varied from thirty-seven to seventy-five years, three being over seventy. The symptomatology as regards the nervous system was very variable and indefinite. The onset of the neurological symptoms varied from fourteen months to eight years after the recognition of the primary tumor. In four cases motor weakness of a part or parts of the body focussed the attention to the nervous system. Headache, irritability and mental dullness were the only symptoms present in two cases. Choking of the discs was noted in three cases. Convulsions occurred in two cases and in both of these death occurred shortly afterwards. In one the convulsion was generalized, while in the other it produced *epilepsia partialis continua*. The location of the secondary lesions in the nervous system was of great interest. In five cases the cerebral dura was involved either intra- or extra-dural. In only one case were there multiple

tumors in the brain substance, and in one case the tumor cells with the blood stream of the brain. In two cases the choroid plexus was involved; in one there were scattered tumor cells in the plexus of the fourth ventricle and in the other a definite nodular growth was noted grossly in the plexus of the lateral ventricle. In the three cases with choking of discs, one had a tumor in the left posterior cranial fossa and the other showed multiple nodulès throughout the brain substance; the third, a large dural tumor of middle fossa with involvement of many cranial nerves. In only two cases was there involvement of the lungs, while in four cases metastasis to the bones had occurred.

PROSTATIC GROUP

Case VIII, Summary: Primary cancer of the prostate. Metastases to the lower cervical, lower lumbar, and sacral vertebrae. Spinal extradural tumors, C-7 to D-2, and another extending into the cauda equina.

A. G., a man of sixty-four, was admitted to the Philadelphia General Hospital May 6, 1921, service of Dr. Potts, and died March 11, 1922. For six months previous to admission he had complained of occipital headaches and of tenderness in the lower spine. Ten days before admission he had a profuse hematuria. Examination at this time revealed a carcinomatous mass involving the prostate and bladder. Roentgenological examinations showed secondary involvement of the sacrum and ischia. Neurological examination upon admission revealed a moderate amount of atrophy of the upper extremities and fibrillary tremors of the upper limbs. The tendon reflexes at the elbows and wrists were present. The lower extremities were paralyzed, flaccid and atrophied. The knee and ankle reflexes were absent. He complained of sharp pains in the legs, intermittent in character. He had lost control of the sphincters and was impotent. There was a saddle anesthesia about the anus. The man gradually lost weight and died.

At necropsy a primary adenocarcinoma of the prostate was found, with metastases to the lower cervical, as well as lower lumbar and entire sacral vertebrae. Extradural tumor masses were noted, one-half cm. in their greatest thickness, over the posterior aspects of the cord, the upper one extending from C-7 to D-2, and the lower one, over the lower three centimeters of the cord. One tumor mass, one cm. in diameter, was intradural and involved the innermost roots of the cauda-equina, extending upwards to the conus. [See Fig. 5.] Microscopically the tumor masses were adenocarcinomata. There was ascending degeneration of the posterior columns approaching nearer the median line as the cord was ascended.

Case IX. Summary: The primary tumor was located in the prostate, with metastatic cells in the vessels of the brain and pia.

B. S., a white man of 81 was admitted to the Philadelphia General Hospital January 17, 1924, service of Dr. Gilpin, and died January 24, 1924. Little of his previous history was obtained, because he was mentally confused. Upon interviewing his wife, a similar mental state was encountered. As near as could be learned he had not consulted a physician for fifty-three years. Upon admission there was marked shortness of breath, dizzy spells and headaches, which had existed three months. During the week in which he was in the hospital, he grew rapidly weaker and death occurred on the eighth day.

At necropsy the changes found in the body organs were the usual ones seen in arteriosclerotic cases. The brain was soft, with convolitional atrophy, especially marked over the left central convolutions. Blood vessels were whitish, thickened, and showed plaque formation. Microscopically, cortical atrophy was very evident. In the vessels, both veins and arteries, were large, irregular, vesicular nuclei, staining very deeply, and surrounded by well defined but irregular cytoplasm. These cells could be seen at once to be foreign to the blood stream and were cancer cells. The vessels in the pia, in particular, contained the tumor cells, and about them lymphocytes could at times be found.

(To be continued)

ENDOCRINOLOGY AND PSYCHIATRY; SOME PROBLEMS

BY PROF. DR. MED. AND PHIL. M. SEREJSKI (MOSCOW)

Endocrinology attracts from day to day growing attention. Not only do the questions raise thoughts related to general somatic and psychic problems, but also ideas concerning individuality and race are brought in apposition to the activity of the endocrine glands. Thus, according to the speculations of Keith, the characteristics of the European race may be explained by the influence of the hypophysis, of the Mongolic race by the thyroid, and of the black race by the adrenal glands. Dickinson distinguishes two types of people: primitive-hypophyseal, and civilized, quite in opposition to Keith's ideas.

The progress in endocrinology develops on account of the growing complexity of the problems. The idea of qualitative order, termed "dysfunction," has been put forward in addition to hyper- and hypofunction. This was added to by the notion of the polyvalens of hormones. Next the glands were thought to be in close contact, in a constant mutual influence. It was then discovered that pluriglandularity is not a rare casuistic material, as Claude and Gougerot at first imagined, but quite the usual thing. And even such a classical monoglandular endocrinopathy, as exophthalmic goiter is taken into doubt and at the present one gets interested in the (neuro) thyro- thymogenic hypothesis of that syndrome. The close relationships of the endocrine glands to the vegetative nervous system makes investigation still more difficult. Bauer hence puts forward "the principle of triple security" and speaks about the accordance between endocrine, neurovegetative and autochthonic processes. The meaning of the endocrine system, as of a transformer of energy and regulator, is very complicated and important too (see the experiments of Hart and others on the influence of temperature upon thyroid glands and gonads).

Notwithstanding all these difficulties, or better, due to them, the attainments in endocrinology, during the last years, are simply fabulous. To begin with, there have been made efforts, to find the basis of the biochemical nature of the hormones. The activities of most of the hormones are due to the presence ofamins, which were so far, regarded as "refuse" in the intermedial metabolism and

have proved to be of an important biogenic meaning. It has been found, that adrenalin and the newly discovered real hormon of thyroid gland, termed thyroxin (Kendall), also belong to the amin group. When speaking of the success of endocrinology we must remember Steinach with his fantastically audacious efforts, that throw a bright light upon the interesting and important problems of sex, of homosexuality, hermaphroditism, etc. And last of all, comes insulin, the greatest of the modern therapeutic attainments, due to collective efforts of endocrinology and enzymology.

Such a feverish work in endocrinology could not be without influence upon psychiatry. Fauser had been one of the first who tried to find out by help of Abderhalden's method the dysfunction of glands and even to build a new classification of dysglandular psychoses. But this seductive idea could not be realized owing to the imperfections of Abderhalden's method, that frail method, which is full of paradoxal singularities. Everything goes smoothly when it is used by dilettants but its reputation among specialists is rather bad. "The reaction of Abderhalden in its present state has deceived our expectations," concludes Ewald,(1) author of an ample monograph upon this reaction and on its application in psychiatry. In half of the cases of hysteria and psychopathy this author found a positive Abderhalden's reaction in a whole group of organs; the same has been observed in most of cases of manic depressive psychosis, a fact that was regarded quite absurd by former authors. The sexual specificity in most cases could not be demonstrated. Using the new method (solution of the albumen of organs) Ewald did not comes to better results and states, in passing, that in cases of organic processes of the brain the above reaction on cerebrum has been frequently negative. My own work (2) proves, that the above reaction cannot be relied upon in any way.

So one was obliged to follow other indirect, but more certain ways, as Fischer, Kretschmer, Weil and others did. Fisher (3) for many years made studies of morphological problems and in his last work on "eunuchoidism" gives us a very clear picture of a somatopsychical syndrom with the definite somatic form of eunuchoid, corresponding to the definite psychical structure. The character of the eunuchoid is very much like the epileptic in its negative qualities. For instance, eunuchoids are irritable, slow, eccentric and pedantic; but still they don't possess that socially-useful activity which characterizes the epileptics. The latter have an active character, the former are passive. Eunuchoids are unsocial and so the fact that there are so many of them among criminals must not surprise us. Weil (4)

approached this problem from another point of view. According to anthropometric measurements he found that the relation between proportions of man's and woman's shoulders and pelvis meet on the mean values. He refers to such cases as "asexual embryonal form." These, if taken together with the predomination of the lower part of the body over the upper, gives us the possibility to judge about endocrine disorders and partly about eunuchoidism. Weil finds such anthropometrical data not only in proper eunuchoids, but also in people with the psychosexual infantilism, decreased erotism and so on. The same "eunuchoid" proportions he has noted in homosexuality. The interest in "eunuchoidism" has lately grown because of the statement of Kretschmer about the likeness between eunuchoidism, asthenic construction of the body and schizophrenia and about the inclination of schizophrenics to homosexuality.

In addition to "eunuchoid" and "dysthyrogen" syndromes (which are already well known) I should like to call attention to a syndrome with a definite somatic and psychic, the so-called *mongolism*. (Details are to be found in my special article.) (5) The chief somatic symptoms are: crooked eyes, macroglossia, hypotonia of muscles, hyperextension of articulations: the additional brachycephalia, epicartus, navel hernia and so on. The behavior of such patients is dictated by the positive "biotonus," which gives the whole tone to their psyche and to their emotions. Their dissatisfaction disappears after the removal of the causes. They are adapted to social life, but they don't feel any social emotion. Besides the passive imitation I should like to note the active capacity for imitation, which enable to uphold the biotonus. One of our patients, for instance, notwithstanding an almost complete absence of speech, perfectly imitates declamation, another one imitates the investigation of the Babinski's reflex in such a way, that one may distinguish, whom of the two doctors he imitates at the moment. Due to the slightly excited spirits, connected on one hand with psychomotoric mobility and with mental debilitas on the other, we may term the psychical state of the mongolics "erotic debilitas." It would be fit to mark here that in the above-mentioned article we have described another, less frequent type of mongolism—"hypogenital," where hypogenital phenomena are to be found along with hypothyroid: cryptorchidism, hypoplasia genitalia, definite aerocyanosis, aplasia of upper lateral incisors, long fingers and so on. In these cases we have particularly noted the elements of torpidity and indifferent mood. Such a steady somatopsychical syndrome, involuntarily draws our thoughts towards endocrinology. It has been spoken of the rôle of thyroid gland for

a long time already (Virchow). Bloatedness of the skin, the broad bridge of the nose, swollen abdomen, navel hernia and so on are signs of hypothyrosis. But still there is no complete likeness, especially in the psychical picture: apathy in cases of hypothyrosis, on the contrary cretism in mongolism (moreover torpidity of psychic is to be observed in the first period). Stölzner (6) gives new data in favor of the thyroid etiology of mongolism (the mothers of seven out of ten suffering from mongolism showed signs of hypothyroidism). Pathological-anatomical researches prove that the endocrine glands have been injured. (See Vas and others; Timme (7) has found by X-ray pituitary alterations in 23 cases of mongolism out of 24.) Besides pluriglandular insufficiency, a retardation of the general development is also to be observed (details are to be found in the pathological-anatomical picture, I had the opportunity to observe in a patient suffering from mongolism, see the above-mentioned article).

The more somatopsychical syndromes we discover, the nearer we are to our final aim, which is to study not only sick personalities, but healthy normal ones too. I am quite sure, that in future we shall be able to judge by the psyche about all the states of endocrine disorder, as Kräpelin hoped to do in relation to the infection diseases. Kretschmer (8) goes further than merely to find singular psychical syndromes. He tries to give us a universal theory and to approach closely the modern questions of characterology and constitution. Former attempts concerned partial anatomical or histological signs (Benecke, Virenius and others), but Kretschmer directed by Sigand, speaks already about the construction of the whole body, though, strictly speaking, he is guided mostly by morphological principles and shows us several brilliant somatic pictures, but briefly mentioning about the rôle of endocrine glands. It is clear enough, that the discovery of the endocrine nature of these somatopsychical pictures is a problem of the future. As Kretschmer has so far differentiated but one psychic type it becomes quite clear, that we shall be able to effect further differentiation of cardinal types only by way of detailed study of endocrinology and vegetative nervous system. The types, Kretschmer has fixed, are intelligible as normal ones, but they seem obscure, when he takes them for basis in his idea of psychoses. We may believe that by way of reinforcement of the principal traits of character a scale is obtained: "cycloidia, cyclothymia, manic depressive psychosis." But it remains quite incomprehensible how he can get by way of quantitative but not qualitative changes "shizoidia—shizothymia—shizophrenia." Kretschmer appeals already to the additional idea of "Process-Psychose"

but it is merely a word, a metaphor. Recently efforts have been made to make an account of the complicities of further correlations, whereupon the study of constitutions is to be built. So Pende (8) speaks of two types of constitution: (1) *megalosplanchnic* (large heart, large liver, etc.) with the prevalence of thymus, pancreas, parathyroid glands, adrenal glands, gonads and lymphatic system on one hand and vegetative nervous system on the other (so-called hypervegetative type); (2) *microsplanchnic* (s. phthisicus), connected with the thyroid glands and hypophysis and the prevalence of the animal nervous system (so-called hypovegetative type). Thus with Pende the individuality is determined not only by endocrine glands but also by the definite development of the nervous system.

In our further investigations we must bear in our minds the three important methodological principles. The first to consider is the differentiation of "pathogenetic" and "pathological" endocrine disorders. Ratner (10) points out a number of symptoms in paresis, which appear to express the "plastic" influence of hypothyrosis, they are "pseudoedema catatonique" yellowish-waxen appearance, atonia of muscles of the face. Other symptoms also become clearer, as for instance, the incapacity of such patients to effect synthesis which I explained by the disorder of metabolism: by the fact, that protein cannot give the end-products of metamorphosis, the same takes place in cases of hypothyrosis; see my article "Metabolism in paralysis progressiva." (11)

The pathological rôle of endocrine glands has a meaning of still greater importance. Endocrine disorders may determine the character of illness, independently of the area they injure, what happens more often in cases of hypo- and afunction; we shall note, for instance, myxedema and the alterations of psyche after the removal of the thyroid glands. More often the pathogenetical influence is connected to the general constitution; thus, according to Fischer, people with cyclothymic temperament, suffering from psychopathy with the inclination to phobias and fixed ideas, are subject to Basedow's disease. The next important methodological principle is the distinction of different phases of gland activity. Each age has its own, if I may say so, "endocrine dominant," which are thymus and pancreas in the newborn, when the salt metabolism prevails, thyroid glands, hypophysis in the period of fat metabolism in the age of three years and so on. Such a "dominant" might be syn- or antagonist in relation to the gland taking an immediate part (in a genetic or plastic way) in the general picture of illness, what might make a considerable change in the latter. This fact might explain the

torpidity of the psyche in mongolism until the age of two years and their erratic psyche after that age. The third principle is the differentiation of two factors, which I should call "static" and "dynamic." Thus the given formation (as for instance an abnormal tooth) might depend on the dynamic influence of some glands or other (which is the analogy to "phenotypic") or might be inherited ("genetically"). Both these cases are of a quite different importance and value.

So far we have spoken of the influence of endocrine glands upon the psyche, but it is as interesting to consider the influence of psychical factor upon the activity of endocrine glands. In my article "Emotions and their biochemical activities." (12) I ventured to show the influence of emotions upon the organs of internal secretion, especially on the adrenal glands, which on their side determine an increased metamorphosis of protein and fat. The emotions might cause the beginning of Graves' disease, diabetes, pituitary disorders and so on. Principally we may admit as possible not only the influence leading to dysfunction but the beneficial influence of the psychical factor upon the endocrine system. So several authors (Kohnstamm, Mohr and others) speak of complete cure in cases of Basedow's disease by psychical means. A chronic chlorosis, that would not submit to ordinary treatment, provoked, according to Morawitz and others, by disorders of thymus and gonads, is overpowered by the same means. In one case, when the sexual development was retarded for 10 years, Mohr has removed "complexes" by psychoanalytic means and thus resulting, that the patients' breasts began to grow. Psychotherapeutic, if not psychoanalytic, attempts in that field are sound as a principle and are practically very desirable.

To finish with I shall say a few words about biochemical researches of the field of psychiatry. These researches came to a circle, as can be easily seen from the book of Wuth (13) about somatic disorders in mental diseases. So far psychiatrists took little care of the whole body of the patient, paying attention to some part of it only. As we further find a decreased amount of fibrin, alteration of blood-coagulation and so on, in cases of mental diseases, we cannot separate such findings from endocrine factors, nor esteem their value independently of the latter. So we shall have to revise the greatest part of above stated works from the point of view of the interrelation to the endocrine system. The conditions are aggravated by the fact that a great many common diseases that have nothing to do with mental disorders (as for instance tuberculosis),

are often followed by endocrine anomalies. So according to the recent works of Mott and Robertson (14) alterations of the hypophysis, very like those observed in cases of tuberculosis, are to be found in schizophrenia. Recently articles appeared stating the etiological relations between tuberculosis and schizophrenia. Even such a common disease as influenza is often the cause of serious alterations in the vegetative and endocrine systems. All this is to be taken into consideration in every particular case.

It is possible, that a combined and detailed study in that field will delay the final solution but it will make our perspective the more sound and tempting. Furthermore we ought to consider as a most important problem endocrinological researches in mental diseases, that will reconstruct and steady our psychiatric classification, which inevitably develops out of psychological into biological. It would not be right to focus one's attention entirely on the endocrinology and to replace the old and incorrect expression "mental disease is a disease of brain" by a new and not less incorrect one "mental disease is an endocrinopathy." Otherwise we could be brought to a rather amusing position, as it occurred to physicians that were too fond of endocrinology, when the psychiatrist puts the neurasthenia in pathogenetic relation with the dysfunction of adrenal and thyroid glands (having named it "endocrinosteny") whilst the internist puts them in connection with bilecolics.

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CLINICAL CONTRIBUTION TO DRUG ADDICTION: THE STRUGGLE FOR CURE AND THE CONSCIOUS REASONS FOR RELAPSE

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The facility with which "cured" addicts relapse is one of the most strikingly observed phenomena about drug addiction, and it is also largely responsible for the low esteem in which addicts in general are held. Prison physicians, police magistrates, judges and others interested in law enforcement see a procession of healthy looking addicts return to them time after time and physicians who treat addicts in hospitals and sanitariums know that most of those who now come to them are repeaters.

Relapse is much more common to-day than formerly. There are two reasons for this: Recently adopted narcotic control measures have been much more effective in preventing the addiction of stable normal persons than of unstable psychopathic persons, and the coercive features of narcotic laws have already forced the cure of the more hopeful of the curable cases. In other words, it is chiefly those who by nature are more predisposed to relapse who now become addicted, and the more curable of the older cases have in the main been cured, leaving to be treated a class of addicts which is peculiarly liable to relapse. However, the relapse of cured addicts has always been very frequent; but relapse has not been so frequent nor has permanent cure of addicts been so difficult as is commonly supposed. The widely prevalent misconception about the difficulty of permanently curing drug addiction is traceable to two factors: (1) As a rule drug addicts as well as their physicians conceal the addiction as long as it is possible to do so, consequently the addiction of cured cases is seldom heard of before cure is effected and is never mentioned afterwards; (2) the repeated treatments of so many relapsing cases make a one-sided impression on the uninformed and unreflective mind. By a study of the subject we have been led to believe that there are thousands of cured addicts in the United States to-day, and if we class as former addicts all of those persons who after several weeks of opiate medication suffered for a few

days with mild withdrawal symptoms—such as restlessness, insomnia and overactivity of certain glandular functions—the number of cured addicts must exceed those who remain uncured.

The conclusions of this paper are based on a study of 210 addicts embracing all classes of society, from successful professional men to habitual criminals. They had relapsed a variable number of times ranging from one to twenty. The duration of abstinence from narcotics varied from three days to ten years, but each addict included in this series of cases had abstained at least once for as long as fourteen days. Nearly all of them had been off the drug at one time or another for three months or more and the majority had experienced periods of abstinence for as long as six months. Abstinence was enforced in many instances due to confinement in prison for violations of narcotic laws but all except a few of the prison cases had sought treatment and voluntarily abstained either before or after their prison terms. The first voluntary abstinence was likely to last longer than subsequent ones. As a rule the time would shorten with each attempt at cure until finally there would be nothing but fruitless efforts at treatment with no abstinence at all.

The idea is widely held that opiates bring about a state of moral perversity that renders addicts indifferent to cure and therefore liable to relapse, or that in many cases these drugs produce some physical change that makes their continued use necessary and the impulse to return to them irresistible. It seems plain, however, that induced moral perversity has nothing to do with it and that physical dependence upon opium though important is, except in rare cases of prolonged addiction, only temporary and is second in importance to psychological factors in bringing about relapse to the drug.

It has long been recognized by students of the subject that the addict is generally abnormal from the *nervous* standpoint before he acquires the habit, while some like Block (1) assert that normal persons never become habitues. It is probable that Block does not class as habitues persons who because of certain painful conditions are necessarily addicted in the treatment of them. If his assertion allows for this exception and is limited in application to countries which like the United States have laws that protect people from the consequences of their own ignorance, its accuracy is supported by my own findings. Ninety-one per cent of this group and eighty-six per cent of a group reported elsewhere (2) by me deviated from the normal in their personalities before they became addicted.

The fact that becomes so clear upon the study of cases, that most addicts are in the beginning abnormal, is in the viewpoint of many

persons obscured by the more obvious fact that the habitual use of opium creates in any type of person a temporary physical dependence upon it. This dependence being the most striking thing is often erroneously thought to be the most important, if not the only important, cause of addiction and frequent relapse. The passage within recent years of laws making it a penal offense to possess or sell narcotics and the consequent arrest of numerous addicts who for ingrained mental reasons take narcotics but who for social reasons blame the narcotics themselves, and complain about the physical discomfort of treatment that is so often forced on them, has served still further to concentrate attention upon the less important factor of physical dependence.

A study of these 210 cases has shown that psychic causes produced their peculiar susceptibility to opiates and cocaine and that the cause for relapse was primarily the same seductive mental influence that was responsible for the original addiction. This primary psychic factor was reinforced later on by memory associations and habit and by the induced physical dependence that gradually developed. The memory associations and habit were in part created by the physical dependence. The primary psychic factor remained fairly stable throughout the entire period of addiction whereas the other three factors increased in intensity with the passage of time and brought about a gradual change in the relative importance of the various factors. The force of physical dependence increased more rapidly than the other two variable factors. In persons who had been addicted for no more than a year the primary psychic factor was almost solely responsible for relapse in those who had abstained from the drugs for as much as fourteen days and the importance of physical dependence was insignificant. In those who had been addicted for fifteen years or more the force of physical dependence equalled, if it did not exceed, the primary psychic factor as a cause of the relapses that occurred during the first few months after treatment with complete withdrawal of the drug. The importance of physical dependence as a cause for relapse increased more rapidly in neurotic patients than in those who were considered to be normal. It was so important in some cases of long-standing addiction of nervous persons as to preclude the possibility of recovery by any means except enforced confinement over long periods of time.

Attitude of Addicts Toward Their Addiction and Toward Treatment

An understanding of the attitude of addicts toward their addiction and their real motives for seeking cure adds much to our knowledge

of why treatment of them so often fails. Some relapsing addicts have always regarded their addiction as beneficial rather than harmful to them. This class is extremely rare. Others, much more numerous, feel that having progressed to their present state they would be better off if left alone and no effort were made to cure them. The former accept treatment only under physical restraint and relapse as soon as they regain their liberty. The latter seek treatment only because of the urging of friends, the difficulty of maintaining themselves as addicts or because of their fear of the law. Their efforts are half-hearted and they usually relapse promptly, because the unfavorable state of mind into which they have slumped is further accentuated by the mental depression and physical discomforts incident to the early period of abstinence. The hope for cure in these cases is to keep them away from the drug until they learn that they are not dependent upon it, and until their realization of this, together with their improved social and physical condition, brings about a change in their mental attitude towards the whole situation.

The relapsing addict who has given up the struggle for cure and only attempts it half-heartedly thinks he is very much misunderstood and abused. This is especially true of those who have served prison sentences for possession of narcotics. Some of them frankly say "If I were left alone and allowed to have drugs I could work," and many of them feel that they would be better citizens than they are if the law and their friends would accept their addiction as final and necessary. Many others who denounce the peddlers who sell them drugs and reproach themselves for buying them and bringing themselves to their present pass plainly show, when their confidence is gained, that their denunciation of the peddlers and themselves is a thinly disguised outlet for the resentment they feel toward the forces that interfere with their normal inclination.

The relatively tolerant attitude that society has towards chronic drunkards, a more troublesome and dangerous type of individual, furnishes the complaining addict with bitter reflections that expose his real feelings about his own habit. The attitude to which they object is reflected even in the air of superiority that some drunkards assume toward them. One of these in a ward with three addicts who were intellectually, morally and industrially superior to him looked with contempt upon them and said to the writer "I used to take that stuff but was cured twenty-five years ago. My doctor said when I stopped I would drink and I have been doing it ever since." He was a repeater in the alcoholic ward and had been

arrested often for drunkenness. The addicts observe that patients like this who are arrested while drinking and disturbing the peace are commonly given small fines or a few days in jail for disorderly conduct even though they are found in possession of liquor in violation of the law, whereas drug users are liable to be searched for narcotics while going peacefully about their business, and given a year or more in the penitentiary if any is found on them. Discrimination such as this causes resentment in those seeking for an excuse to continue their addiction. They consider it to be unjust and pose as martyrs to their weakness or ideals of personal liberty. "We are much better than these drunkards but are not given half the consideration" is an observation that many of them make. They fail to see that justice as administered by law is often an abstract thing depending upon social customs to which all members of society must conform if they would be acceptable in it.

Most persons who become addicted to opium or its preparations through medical means become alarmed as soon as they become aware of their dependence upon the drug and adopt strenuous methods, if necessary, to throw off the habit. This is easily done in the beginning; those who fail have physical diseases that make the use of the drug desirable or necessary at certain times, or they have psychopathic traits that render them especially susceptible (2) (3). The medical cases that remain uncured belong to one of these classes. They are always ashamed of their addiction although they often defend it. Shame is a sentiment which affects even the deliberate dissipators; and practically all addicts, except the worst of the criminal psychopaths, would like to be cured. This is true even of those who have given up the struggle and who would spend the rest of their lives without giving a serious thought to another treatment but for the coercive measures that are brought to bear on them.

That this attitude of indifference to treatment is a late development is shown by the fact that of those who were addicted before the passage of the Harrison Law, comprising 40 per cent of the total number of addicts in this series of cases, all but three had taken treatment at least once, and some had taken it several times before the law was passed. It is also significant of an earnest desire for cure that 20 per cent of the entire number had at some time during their addiction careers voluntarily abstained from the drug and without assistance from physicians, hospitals or prisons succeeded in breaking the habit. Many of these simply "lay around home and kicked it out" without telling members of the family the real cause of their discomfort. These successful self-treatments occurred

usually during the first two years following the beginning of addiction but they sometimes occurred later, especially in patients who were addicted to cocaine and an opiate at the same time. One of the latter who had been addicted off and on for twenty years got off the drug at home with very little discomfort and without any assistance whatever. One physician, after two years of addiction to morphine, repaired to the woods with a camping outfit and a servant and returned in three weeks cured. He relapsed two years later because of a painful illness and was cured twenty years after this because of the activity of narcotic agents.

Though the sincerity of addicts who seek cure is for the time being beyond question, the motives which prompt many of them are fundamentally inadequate and therefore usually ineffective.

The motive for cure in newly created addicts is the instinctive revolt they feel and the vague fears that arise when they find themselves victims of a habit that they can not control. They discover that they are in a situation that they have been taught to regard with contempt and this creates the alarm above referred to. If cure is not immediately and permanently effected the instinctive fears wane and later on are replaced as motives for cure by well defined fears of the law, by fear of social ostracism or financial dependence, and to a less extent by fear of the physical harm that the drugs might do to them. The discomfort and physical depletion caused by inability to secure at all times an adequate supply of drugs has furnished an added motive for cure to many of those who repeatedly relapse. These addicts after struggling with the situation for a time seek treatment in disgust. Others, less sincere, seek it in desperation because they have no money whatever to buy the drug they need, or because a successful raid by the authorities on peddlers has temporarily cut off their supply. A large proportion of repeaters give as a reason for seeking cure that they have revolted against the idea of giving so much of their money to drug peddlers. An addict who in his motive for seeking cure illustrates the motives that prompt many others, came home one winter night keyed up for the usual dose that had been delayed only to find that his wife, in a burst of indignation, had thrown his heroin away. The street cars being tied up because of a snow storm he walked to his peddler's, nearly two miles, through the snow and returned to find that for two dollars he had bought an innocuous drug; another trip brought the same result, and the third one failed to secure even an interview. In disgust he sought and accomplished a cure, but relapsed in a few months. Four years later a shortage of drugs,

following a wholesale arrest of peddlers, prompted him to be cured again. He has been drunk three times during the twelve months following this last treatment, but at present writing seems determined not to relapse to narcotics.

Reasons Given for Relapse

The reasons the addicts gave to account for their relapses often did not furnish more than superficial evidence of the real cause, but there was a tendency to overemphasize the importance of physical symptoms. A large proportion of the psychopaths, who with full knowledge of its danger, had dissipated with an opiate until they became addicts, were unable to give any reason for the relapses that occurred during the first three years of their addiction. Many of them frankly said that they just started to take the drug again and had no excuse to offer other than that they returned to their old environment. This same type of patient would, after eight or ten years of addiction, give weakness or discomfort as an additional reason for their later relapses. Some intelligent psychopaths said they returned to narcotics to get relief from the blues that followed certain difficulties. One highly unstable professional man brooded over the failure he had made of life because of narcotics and traced his final relapse to this brooding.

The frankness of the psychopathic characters (2) (4) contrasted markedly with the evasiveness and self-pity of those who had frank neuroses, and with the complaining attitude of certain temperamental cases. The physical necessity for narcotics loomed large in the minds of the latter. They seized upon any remembered discomfort as an excuse for relapse; a healed wound, a leg broken twenty years ago, a mild hemorrhoidal tendency, an old cured neuritis, and other conditions from which they received no discomfort while taking an opiate were credited with causing pain when the drug was withdrawn.

Ten per cent of the entire number of addicts in this series of cases got under the influence of liquor and took the first dose of narcotics while their inhibitions and judgment were lowered—but only a few of them blamed alcohol. Alcoholic dissipation was apparently a deliberate first step in their relapse, taken in order to give them courage to throw their good resolutions overboard and return to opium.

The medical cases that were considered to be nervously normal attributed their early relapses to the return of the more or less painful physical conditions for which they first took narcotics, and

the later ones to this same cause or to weakness and inability to work when not taking the drug.

Physical Reasons for Relapse.

Opium, unlike alcohol, does not cause, so far as known, any destruction of tissue or permanent protoplasmic change. It does, however, bring about some very obvious functional changes. These result from the efforts of the body cells to adjust themselves to a drug, the normal effect of which is to inhibit cellular and glandular activity so that when the adjustment is made the cells and organs, though bathed in the drug, perform most of their functions in a degree approximating normality. This functional adjustment becomes strikingly evident when the drug, after having been used continuously over a prolonged period, is suddenly withdrawn. The inhibiting influence having been removed there is an increased functional activity of practically all organs and tissue and the nervous system, being suddenly relieved of a benumbing influence under which it has learned to record impressions with normal intensity, becomes hypersensitive. More numerous and more intense impressions are therefore sent by the tissues and organs to a nervous system, which, because of its hypersensitiveness, record them with magnified intensity. The net result is the withdrawal symptoms, some of which are very distressing. Collapse which sometimes occurs is probably due to an excessive relaxation of vasomotor control due to sudden removal of the artificial check under which the system has been functioning.

Nearly every addict in this series of cases discontinued one or more treatments upon which they had ventured before the opiate they had been taking was completely withdrawn, or they returned to the drug a few days later. These abortive attempts are not classed as relapses, but failures of treatment. Such failures were due mainly to the acute physical symptoms accompanying withdrawal and to the unfavorable mental reaction resulting from them.

The various types of addicts reacted with different degrees of intensity of physical symptoms, the objective evidence of which was similar. Intelligent persons with outstanding temperamental traits complained more than any others, the purely neurotic and the dull neurotic came next, while the psychopaths complained least of all.

The acuteness of the intellect of the temperamental persons and their natural disgust or distaste for disagreeable things, caused them to exaggerate the importance of physical symptoms as it caused them to exaggerate the every day trifles and inconveniences of life out of

all proportion to their significance. There may be some physical reason, in addition to their natural sensitiveness, why temperamental and neurotic addicts suffered more than the others. In any event, it was observed that the complaints of normal persons under treatment were adequate to the situation, and the temperamental addicts who showed few objective signs of suffering whined bitterly, while many of the psychopaths who had made up their minds to undergo treatment complained very little even though they vomited, had dilated pupils and showed other signs of distress. The temperamental addicts who gave up treatment before complete withdrawal was accomplished, did so because of the discomfort which they were unwilling to endure, while the psychopaths merely changed their minds. The depression that resulted from the whole physical situation and the lack of the soothing effect of narcotics on their normal mental unrest gave them a different outlook on the world, and in this state, they came to the conclusion that cure was not worth while. Some of them went through with the treatment, however, seemingly to save their faces; they remained in the hospital until the acute physical suffering was over and then left for the purpose of getting narcotics.

Some of all types of addicts sought treatment with the reservation that cure was impossible. They naturally complained a great deal. An addicted dentist, formerly a drunkard, successful in his practice in spite of the time and money lost in taking eighteen treatments, had himself committed to a state hospital for eight of them but carried in a supply of morphine on each occasion. He nevertheless came dutifully with his wife to me for an opinion as to whether he was curable. The nagging of friends brings about this sort of insincere effort.

The acute symptoms that contributed so much toward failures of treatment had very little to do with relapses that occurred two weeks or more after the opiate had been withdrawn. Almost without exception, the early cases felt comfortable and began to gain weight before the end of this period, but slight insomnia and mild restlessness often persisted for several weeks longer and in some there was an indefinite feeling, probably largely physical in nature, that something was missing. Many also experienced a greater fatigability than had been usual with them, but, as a rule, the early cases said that they had no physical desire or necessity for the drug within two weeks after it was withdrawn. In some instances this attitude was probably an expression of forced optimism. In any event there was in many of these cases some slight physical reason for relapse

for as long as two months. These reasons were not in any way compelling, but they added something to the various factors that impelled the unstable to give up the struggle for cure.

The acute stages of glandular and nervous overfunctioning resulting from the withdrawal of opium are also quickly over in long-standing cases of addiction, but in some of these it requires months of abstinence from the drug before all of the body functions return to normal. For the first few weeks after withdrawal of the drug these addicts, although they begin to gain in weight, may have occasional mild pains in the legs and uncomfortable sensations in the abdomen. They are very sensitive to cold and the men at first suffer with excessive seminal emissions which they think weakens them. A feeling of languor and loss of "pep" is very common and many of them get discouraged because of it. If discharged from the hospital during this period the difficulties that they encounter on the outside accentuates their weakness and discontent and prompts them to seek relief in drugs again. Yet many of the patients in this series passed through this critical period outside of institutions and relapsed months later for reasons altogether foreign to the withdrawal symptoms. But in some of the long-standing cases, particularly among the more nervous, there remained fatigability, periodic diarrhea, palpitation of the heart, restlessness and distressing insomnia. Complaints of lack of energy and undue fatigue were very frequent, and some who had been addicted ten or more years claimed that this condition lasted for from six to nine months after cure and was the chief reason for their relapse. "I never had any 'pep' until I took the drug again," was a common statement. Attempts to justify their relapse doubtless caused some to exaggerate the importance of this symptom, but it was so commonly complained of and it bears such a close relation to other symptoms that could be explained by loss of vasomotor tone that it may be considered to be present to a certain extent in a large proportion of cases. A feeling that they would "fly to pieces" was experienced by some of the more nervous types who were deprived of the drug after taking it fifteen years or more. In a few instances the nervous symptoms were so grave as to make a return to narcotics advisable. This is well illustrated in the two cases cited below:

Case 67. A civil engineer, sixty-five years of age, widower, was given morphine for ten weeks during an attack of rheumatism thirty-five years ago. He did not become addicted then, but a short while later there was a recurrence of pain, and a Chinaman showed him how to

smoke. From that time to the present he has taken opium in one form or another, using as high as 20 grains of morphine per day. The patient's mother was addicted three years before his birth and remained addicted until her death. She was hysterical. One of her brothers is described as being extremely wild, and the patient is said to resemble him. One of the patient's brothers was a drunkard and was killed in a gambling house brawl. Other members of the family were normal, highly respected and successful in a business and professional way. The patient was healthy as a boy, but had several spasms from indigestion. He began to drink at college and drank heavily of a Saturday night up until the time he became addicted to opium, but never neglected his work. He is now living on an income partly derived from an inheritance and partly from the fruits of his own labor.

His emotions have been variable. At times he was extremely pessimistic and fearful of failure. He has always been afraid of lightning and of falling through windows when in high buildings, and, though he has built many railroad bridges, could never cross one until it was fully completed.

Physically he has a large frame, but very small hands like a woman's; otherwise there is normal male development. He is feeble but well nourished, and there are tremors of the hand and tongue and he only leaves his room to go after opium. During the past ten years he has had a few fainting spells. His mind is apparently as acute as ever and he passes his time reading Greek and Latin classics and amuses himself with mathematical problems. More than forty years ago he studied medicine for a short period, but when examined was still able to name obscure muscles in different parts of the body.

There have been 20 different attempts at treatment and he actually got off the drug for a period of three weeks six different times. The suffering was always intense and after it was over there was extreme nervousness. Once, after a treatment in Antwerp, he started home immediately and had hysterical spells for two weeks. During the last week of the voyage he calmed himself somewhat by drinking brandy after an abstinence from alcoholics for nineteen years.

Following the last treatment taken several years ago he stayed away from the drug for three months and was hysterical during the entire period, would laugh and cry without adequate cause, was not able to concentrate or talk coherently, could not work mathematical problems, suffered intensely with insomnia as was the case after each cure. He felt as if he would fly to pieces and as if he could break an iron bar in two. All these symptoms subsided immediately after he resumed the use of opium.

Case 84. A physician sixty-one years of age, began to take opium for severe periodic headaches. After about two years he became addicted.

This was thirty-three years ago and in seven or eight years he was taking 20 grains of morphine daily.

His maternal grandmother and an uncle were addicts. An aunt was addicted but cured herself. His father was normal, but his mother and three of her brothers have suffered severely with migraine. One of the patient's sisters has a psychosis. His three brothers were highly successful in the business world, but one of them, now dead, became an addict through having opium prescribed in the course of treatment for sprees. One of the patient's daughters is subject to headaches, but two others seem perfectly normal and have intelligence above the average. His two sons are doing well in business. The addiction of members of his family never led to delinquency or impairment of business ability. The patient himself had a very open make-up, and apparently no nervousness except that indicated by his periodic headaches. He contracted syphilis in 1900 from an obstetrical case and now has some bony tertiary nodules and a suggestion of an involvement of the nervous system. He was emaciated and anemic when examined but had been operated on for appendicitis less than a month previously. He owns a farm and practices medicine, but in recent years has limited his practice largely to office work.

There were eight treatments in this case. Six were successful in that the drug was temporarily withdrawn. Relapses occurred in from one day to two months. The reasons for relapses varied. In one case he left the hospital in such a weakened state that it was necessary to boost himself with opium in order to get home. In all cases he went to work immediately or within two weeks after returning to his home, but being somewhat weak and suffering with insomnia he found it necessary to resort to morphine again in order to keep going.

After a lapse of years the eighth and last treatment was undertaken several years ago because the narcotic division insisted upon it. Following three weeks in a sanitarium he returned to his home, but was unable to work, so took a short vacation and then attempted practice. He felt well, but could not sleep, was restless, hyperactive and busied himself very much. Among other things, he wanted to lecture and tell addicts how glad he felt over being cured. He says he had a spell of religion, and his wife, an intelligent woman, reports that he expressed himself as having just waked up. She says he was entirely changed and people thought that he had lost his mind. In about a month he resumed the use of morphine and in a few days calmed down. The entire family, including his wife, who urged him to take treatment, were glad to have him relapse this time. It is evident that this man had a hypomaniac attack due to withdrawal of the drug.

These two cases illustrate what happens to a greater or less degree in every case of a certain type of addict from whom opium

is withdrawn. Both of them had a bad heredity and a neurotic constitution. They might have been cured by proper treatment before the drug got such a hold upon them, but because of their original instability and lack of resistance they have insufficient reserve to withstand the removal of the inhibiting influence to which their nervous systems had gradually become accustomed.

That the nervous manifestations following the withdrawal of opium are as a rule only temporary, even though the drug has been used for long periods, is shown by the fact that cases are cured after many years of continued addiction. In this series there are some physicians who were cured after twenty years and one after forty years' indulgence, but there was nothing abnormal in their original make-up. The reason for their previous relapses was the lack of sufficient motive to impel them to neglect their work until the withdrawal symptoms had so far subsided as to enable them to pursue it again. The narcotic division by threatening prosecution provided them with the motive they needed. The forty years addict was sixty-five years of age—he was slightly restless at times, but in no way uncomfortable after nine months of abstinence. Another physician not included in this series, because he never relapsed, took 25 grains of morphine daily for most of eighteen years. On five different occasions he tried to treat himself at home by gradually reducing the drug but failed because he would not give up his work in order to do it. Finally he took a cure through the urging of the narcotic inspectors. Insomnia was distressing for about two months and in addition there was for five months some painful bladder condition that he attributed to the medicine given during the course of treatment. He, however, never thought of returning to morphine to relieve this condition and one year after the original treatment he was a perfect specimen of health. These two cases illustrate that for several months after the withdrawal of opium normal addicts do have some symptoms that could be used as an excuse to return to the drugs but that they do not do so when the motive for cure is greater than the motive for relapse.

The motive as well as the desire for cure in many abnormal persons is as great as in normal persons but the motive for relapse is so much greater that the cure motive is less likely to gain a permanent ascendancy over it. The motive for relapse is in some of its phases continuous and is subject to exacerbation. This is why certain unstable persons relapse months after all physical reasons for it have disappeared.

Psychic Reasons Given for Relapse

It has already been intimated that in most cases the fundamental basis for relapse is to be found in the faulty mental make-up of the individual addicts and that the cause for addiction and the cause for relapse are in their most important phases basically the same.

The unstable individuals who constitute the vast majority of addicts in the United States may be divided into two general classes: Those having an inebriate type of personality, and those afflicted with other forms of nervous instability (2). The various types find relief in narcotics. The mechanism by which this is brought about differs in some respects in the different types but the motive that prompts them to take narcotics is in all cases essentially the same. The neurotic and the psychopath receive from narcotics a pleasurable sense of relief from the realities of life that normal persons do not receive because life is no special burden to them. The first few doses, especially if larger than the average medicinal doses, may cause nausea and other symptoms of discomfort, but in the unstable there is also produced a feeling of peace and calm to which they are not accustomed and which, because of its contrast with their usual restless and dissatisfied state of mind, is interpreted as pleasure. These people have in their normal state unusual impulses and disturbing mental conflicts because of them. They feel inadequate or inferior, their usual restlessness and anti-social conduct are expressions of compensatory strivings against this, or specific acts may be pathological outlets for impulses not properly directed. The narcotic properties of morphine and heroin are sufficient for the time being to remove all of this. Inferiority is replaced by confidence, restlessness by calm, and discontent by contentment. The degree of contrast with their usual selves is in direct proportion to their degree of deviation from the normal.

The pleasure derived from opium varies from a slight feeling of calm in persons who approximate normal in their nervous constitution to feelings sometimes approaching ecstasy in the extremely psychopathic. The greater susceptibility to addiction of the more abnormal cases is thus explained. The personality survey and clinical study of the 210 cases that form the basis of this paper shows that their nervous abnormality is the most important cause for the frequent relapse of addicts of the present day. In the psychopaths who make up the larger proportion of them, the pleasurable effect of opium was dulled by the increased tolerance consequent upon excessive indulgence in it and beclouded by the discomfort and uneasiness of their situation. With benumbing of pleasure and increase of discom-

fort a point was finally reached where they sought release from the distress of their new situation. By resort to cure they would get rid of the physical discomfort and the inconvenience of addiction and improve physically as well as socially for a time, but with cure and the passing of their newly acquired troubles, their former restlessness and discontent returned and sooner or later they sought relief for this by resorting to narcotics again. This cycle of events was repeated time and again in some cases, the final result as to relapse being more certain as the other contributing factors (physical dependence and memory associations) grew in importance with the duration of addiction.

A very large proportion of these addicts deliberately addicted themselves with full knowledge of the difficulties incident to a life of addiction. Many of them had been social problems before they became addicted and the make-up of others was such as to insure that a large proportion would have run contrary to established social customs in some serious way even if they had not become addicts. By inference, then, it may be assumed that such cases relapse for the same reason that they become addicted. The inference is not so clear in the case of certain socially acceptable persons of normal or superior intellect who become addicts. These are temperamental or very neurotic persons, some of whom are highly useful or gifted citizens. Opium gives them a feeling of relief or contentment far in excess of that experienced by the average normal persons who because of illness are occasionally compelled to take it. The first few doses usually are taken for legitimate purposes, but, as with the psychopaths, the drugs also give such persons a pleasurable sense of calm that impels them to continue the drug—often in ignorance of the danger, sometimes in spite of it, until they become addicted. When such cases finally try to free themselves of the drug the memory of the relief that it gave them from the underlying unrest of which their peculiar traits or symptoms are an expression, is a serious handicap in their struggle to do without it. As before stated, these people also exaggerate the ordinary difficulties of life more than do average normal persons and they register physical discomfort and pain much more acutely. It thus happens that some very useful and even gifted citizens have tried without success to be cured of drug addiction because of the force of the seductive calm that opiates gave them and because the discomfort of withdrawal seemed to them to be unbearable.

The undoubted sincerity previously referred to of some of the psychopaths who seek treatment is an expression of one phase of

their variable moods, which, in a measure, explains why they first experimented with narcotics, and why after becoming addicted, they find it so hard to leave them alone. They quickly, and without reason of judgment, develop a high degree of enthusiasm for things that are new or different, whether the excitement promised is dissipation or reform, but, because of their lack of emotional balance and consecutiveness of purpose, the trend of their enthusiasm is quickly changed by some counter-current, or when the newness of the experience wears off they slump back into their normal channels of action and start taking drugs again.

The change in direction of enthusiasm is especially characteristic of the open make-up type of psychopathic addict that we have described elsewhere (2). Floating into addiction is easy for them because it furnishes a thrill and is otherwise pleasant, but to get cured requires effort, and having drifted into a difficulty, they find it hard to keep going in the opposite direction long enough to get out of it. The enthusiasm that some of these psychopaths develop for cure and the facility with which its direction is changed to defeat this end is illustrated by an incident that occurred in connection with the handling of three of them. These addicts voluntarily came to the hospital and the drug was rapidly withdrawn. Their sincerity and determination to get well was shown by the uncomplaining way which they suffered. On the fifth day they had passed through the most severe stages of treatment and were still in high spirits over the prospect of recovery. An interne then refused to grant them a simple request and in doing so made a remark that they construed as insulting. The rebuff in no way affected their physical comfort but it changed their entire outlook and caused them to demand a discharge from the hospital. They came in to escape at any cost from the dependence and despised social position that the addiction had brought to them and, reacting to a slight, the result of their addiction, they faced promptly about and returned to it determined now to assert their rights as free born citizens.

In the discussion of the inebriate type of addict in another paper (2) we have already indicated one of the most important reasons for the relapse of drug addicts. It was shown that a large proportion of addicts have a so-called inebriate or narcotic impulse to an unusual degree, and that these persons have an indefinite nonspecific craving that is appeased by alcohol, opiates, ether, veronal and other drugs having narcotic or hypnotic properties. Forty-four of the addicts in this group of 210 cases fall very definitely in the inebriate class. The business or professional man who at

intervals goes on alcoholic sprees, neglects his work for a week or more and brings discredit upon himself has, in so far as the impelling motive for this conduct is concerned, the exact counterpart in many of the cured addicts who suddenly and without obvious cause begin to take drugs again.

It is appreciated that when we say a man goes on sprees or relapses to drugs because he has a periodic craving or phase of depression which narcotics satisfies or lifts him out of, we have stated only an end result and have left the primary cause of the craving or depression undisclosed.

The love of intoxicants or narcotics is an expression of a deep-seated motive that reaches its greatest intensity in adolescence and may find expression in various ways. It is closely related to various excitements, enthusiasm, cravings and related feelings. The normal man can regulate and control this motive or impulse when it tends to take an abnormal direction. In the abnormal man with feelings of inferiority and a highly sensitive or poorly organized nervous system the motive is stronger and the appeasement of it more satisfying. He is always striving for an emotional something just out of his normal reach. Alcohol or drugs brings it within his range and gives him the satisfaction that he does not know how to obtain in any other way.

The periodic alcoholic or opiumist who has an impulse to relapse is traveling on a low and unsatisfactory emotional plane. He meets a disappointment or rebuff or encounters some form of mental or physical pain: These depress him still more and by so doing accelerate his impulse to seek relief and emotional satisfaction by the only means he knows. He brings himself under the influence of intoxicants or narcotics and by so doing relieves himself of mental pain and suffering.

A discussion of various theories as to what may be the underlying cause of the narcotic impulse would lead us too far afield to be entered into here. With the suggestions offered we give the end result as to observed fact, this study clearly shows that having once felt the soothing effects of opium, many of the cases become addicted to it in the first place and relapse time after time because of the force of the impulse.

Memory Association and Habit

In addition to the important etiological factors incident to the type of person who becomes addicted in the first place and the complicating physical symptoms which follow the use of opium over long

periods of time, the taking of the drug results in the formation of numerous memory associations which are themselves potent reasons for continuing the drug or bringing about relapse. In this sense, opium addiction is a real habit. It is a common observation that no man lightly gives up anything to which he has accustomed himself. We see this plainly exemplified in the cured tobacco smoker who relapses after a period of abstinence and feels great relief in doing so. A cured smoker who usually does not crave tobacco may feel an intense desire resembling hunger when he gazes upon a box of cigars or sits in the company of friends who are smoking. The genesis of this desire is apparently wholly mental. The craving is due to memory associations and the habit the smoker has acquired of releasing a certain amount of energy by smoking when placed in certain environments. If smoking is indulged in the aroused but pent-up energy flows smoothly into an accustomed channel, the tension is relieved and relief is obtained. Habitual indulgence in opium creates memory associations similar to those connected with the use of tobacco and adds some of its own. The craving that some cured addicts experience after the state of physical discomfort is over, and the "hankering" for the drug that they speak of, is due largely to these memory associations. The impelling force of habit and the satisfaction derived from gratifying it, is seen in the morphine or heroin addict, who, when deprived of his customary drug, stabs himself with needles or safety pins, so-called "needle addiction."

The addict relieves himself of oncoming discomfort several times each day by taking a hypodermic of morphine or heroin. Due to difficulty in obtaining opiates he is often in actual pain before securing relief, and he worries a great deal about his source of supply. There is thus formed a strong association between distress, both physical and mental, and taking the drug. After a cure the first disappointment or illness he suffers brings forcibly to his mind the method of relief he has learned so well. The impulse to resort to it is strong and the stock from which addicts are recruited insures that resistance to it will be weak. We see this cause illustrated in an addict who said "The winter came on, I was cold all of the time and could not stand it without the drug . . .", and in the one who suffered a mild attack of influenza and gave as his reason for relapse that he was weak and had to boost himself with the drug. It is chiefly memory associations that cause many cured cases to feel discouraged and have the "blues" on a rainy day.

The return of addicts, especially of the unstable type, to their old environment adds greatly to the danger of relapse. Recently

cured cases are restless, they as a rule are without employment and they naturally turn for company and diversion to their old companions among whom there are usually some addicts. Nearly all of those who have abstained from narcotics for several months report that they have no desire for the drugs unless they see some one else take them or unless they associate with other addicts in situations which they formerly enjoyed. By arousing memory associations this unfavorable environment creates a craving that the unstable cured cases seldom resist for any great length of time. The power of memory association is illustrated by the case of a patient who voluntarily stayed two months in the hospital and was off the drug five weeks of that time. He thought daily of certain former associates with whom he had been accustomed to take morphine. He complained that he could not get the subject off his mind and that it kept alive his craving. A small party in which he formerly played poker and took morphine with a few friends, was reenacted several times in his dreams. The result was that the intense desire continued after the physical discomfort had passed.

It was noted in other types of cured addicts, as well as the cured inebriates, that any frustrated desire or unsatisfied longing was transformed into a desire for narcotics. Some had a craving for narcotics when they were hungry, and others when they wanted to smoke. The craving would be completely relieved by food or tobacco. In some, certain unsatisfied social impulses were directed into the narcotic channel. The craving produced by social longing is more serious than that which is purely physical in origin because it is not so easily appeased. The longing for companionship, for the good will of others, the desire for a position the salary from which would insure the ordinary comforts of life and relieve financial worry, would, when frustrated be directed into the channel that experience had shown would resolve all longings by dulling the faculties that gave rise to them. The cured addict is advised to abandon his old associates, but he too often has no others who look upon him with understanding sympathy. When this is the case, he inevitably gravitates back to them to relieve the tension of his social impulses. This, in itself, is good for him, but the environment arouses memory associations connected with the use of narcotics and affords opportunity to return to them when his resistance is weakened. Without a social environment that satisfies certain emotional impulses and an occupation that diverts the mind while it absorbs the physical energy that is seeking for an avenue of expression, the continued abstinence from narcotics by a former addict is extremely difficult.

Relapse was precipitated in some cases of this series by emotional disturbances incident to financial difficulties that could only be made worse by the return to narcotics; by the nagging influence of a suspicious wife, who, to protect her husband from relapse, watched every move he made; by a loss of position, by a deserved rebuke, and by other seemingly inadequate causes. One man, abstinent for ten years, relapsed because of an injury that kept him in bed for a week. Such relapses, of course, occur in unstable persons, who are in constant danger of falling under the depressing influence of some cause that would impel them to seek relief in narcotics. They know that the remedy will in the end increase that difficulty, but for the time being the relief promised overshadows, in importance, all other considerations.

In addition to the various pathological strivings and impelling memory associations that act independently of the patient's will to bring about a resumption of the use of narcotics, some account has to be taken of the pleasurable physical thrill that large doses of these drugs give to certain addicts. This thrill has been discussed in another paper (3). It is sufficient here to say that striving for a repetition of it causes some psychopaths to inject narcotics directly into their veins, and its intensity may be judged by the fact that a few of them link it with sexual feeling. Some of these cases seem to return to narcotics purely for the physical pleasure the drugs give them aside from a negative feeling of mental relief that is also obtained.

Relapses to Cocaine.

What has been said about the causes of relapse to opium applies in a general way to cocaine, but the relative importance of the various factors differ. The force of physical dependence is insignificant as a cause of relapse to this drug. The cocaine addict who has been taking large doses and is suddenly deprived of it goes to sleep and it may be difficult to arouse him at all or to keep him awake for more than a few minutes at a time for the first forty-eight hours. He then passes through a short period of physical and mental languor, during which there is a "hankering" for the drug but no pain. The ease with which some morphine and heroin addicts are taken off these drugs is explained by the fact that they also had been taking large doses of cocaine. The hypersensitiveness resulting from the withdrawal of the opiate is counteracted in them by the sleep and lethargy that results from withdrawal of the cocaine.

The pleasure arising from the narcotic effects of cocaine is less than that from opiates, but the pleasurable physical thrill is greater

and it is a general mental and physical stimulant. It differs from opiates in that it produces pleasure more by the elevation of normal feeling than by the suppression of weakness. It is, therefore, a more positive form of dissipation.

A number of persons dissipate with cocaine now and then but never become addicts; their indulgence is comparable with week-end drinking. Those who become addicted to the daily use of cocaine almost invariably take up the use of morphine or heroin sooner or later and then decrease the amount of cocaine, or abandon its use altogether. There is not one pure cocaine addict in this series of 210 cases, but there were a number of mixed opiate-cocaine addicts among them at the time they were examined, and thirty-five per cent of the total number had been addicted to cocaine and morphine, or to cocaine and heroin at one time or another. These mixed cases are on the average more subject to relapses than those opiate addicts who have never taken cocaine regularly. The difference is not due to anything that cocaine or the mixture of cocaine and opium does to them. It is traceable to the fact observed in the study of these cases and others not reported here, that the cocaine addict is more psychopathic in the beginning. He becomes addicted merely through his impulse to dissipation, whereas physical dependence complicates matters for users of opium, and causes more stable persons to become addicted to it.

Summary

The relapse of drug addicts is mainly due to the same cause that is responsible for their original addiction, namely, a pathological nervous constitution with its inferiorities, pathological strivings, etc., from which narcotics give an unusual sense of relief and ease.

The inebriate impulse is one of the most important causes of relapse.

Relapse is more common than formerly because the addiction of more normal and therefore more easily curable persons is less common.

Nearly all addicts make sincere efforts to be cured during the early period of their addiction. Many of the cures taken later on are mere matters of expediency and are insincere in effort.

The hope for cure wanes as time passes and the force of habit, numerous impelling memory associations, and increasing physical dependence upon opiates is added to the original nervous pathology.

Physical dependence upon opiates is unimportant as a cause for relapse during the first two or three years of addiction in those addicts who have been off the drug for two weeks or more.

In some very nervous persons who have been addicted to an opiate for many years, withdrawal of the drug may produce hysterical symptoms or hypomania lasting several months.

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SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY

THE FOUR HUNDRED AND THIRTY-THIRD REGULAR MEETING,
FEBRUARY 1, 1927. THE PRESIDENT, DR. GEORGE H. KIRBY,
PRESIDING.

A CASE OF PITUITARY TUMOR WITH COMA FOLLOWED BY COMPLETE RECOVERY

IRVING J. SANDS, M.D.

Abstract

The patient, a tailor, fifty-seven, was first seen on July 14, 1926. Three days before he had had a headache, began to vomit, was a little irritable, and on the evening of the 13th, became very restless. His son, who is a physician, gave him $\frac{1}{4}$ gr. morphine. He became comatose, and had definite Cheyne-Stokes respiration.

In the latter part of 1921 he began to find it difficult to work because of diminished eyesight. Finally a nerve surgeon diagnosed his condition as one of pituitary tumor, but it was decided that it was too late to operate. He was given pituitrin and permitted to return home. His son learned to recognize, by his personality change, when he needed pituitrin, and has been giving it to him right along.

On July 14, 1926, he was in coma. He had irregular pupils. Both reacted sluggishly. The left eyeground was definitely atrophied; the right showed some atrophy of the temporal side. He was admitted to the hospital, and a lumbar puncture was done. Seventy-five c.c. of spinal fluid was removed. He had bilateral pyramidal tract signs; absent abdominals; a blood sugar of 149 mg. per 100 c.c., a urea nitrogen of 5.8 and a creatinin of 1.77 mg. per 100 c.c. There was sugar in the urine. After a lumbar tap he was given surgical pituitrin, one ampoule every three hours for three days, and then one ampoule every four hours. Within 36 hours he regained consciousness and his pyramidal tract signs cleared up. He was able to talk distinctly. Then he showed atrophy of the left eyeground; he had a slight atrophy of the right, and the right vision was limited to the nasal side. The X-ray picture of the sella is presented. The case shows hypo- and hyper-pituitarism of the mixed type. The clinoid processes are gone; the sella is completely gone; the floor of the sella is depressed. The patient shows the pituitary condition, with scanty hair and general body contour. His right eye turns slightly to the right because it gives him a larger field of vision, since his eyesight is limited only to the nasal half of the right disc. He is receiving surgical pituitrin, one c.c. ampoule, every day, and sometimes every

second day. The son recognizes whenever he needs it. This is manifested by his extreme irritability, headache, and at times vomiting. Occasionally a lumbar tap is performed. Sometimes some thyroid is added to the pituitrin. He runs a little elevation of his blood sugar curve. He does not have any complaints. He takes care of his son's office, answers the telephone, and his intelligence is intact. There is no polyuria.

Discussion: Dr. J. H. Leiner said: A number of questions present themselves regarding this case. What happened at the time of the lumbar tap? Is it possible that the neoplasm was of cyst formation which was relieved by this procedure?

Relative to the blood sugar, water metabolism and the administration of pituitrin, there is considerable controversy. Are the former two functions based on a purely glandular or neurogenic origin—or on a combination of the two? One school, led mostly by Camus and Roussy, believe that it is due solely to neurogenic control. This patient had a pituitary syndrome concomitant with a coma. Was this a real coma? It is not borne out on a retention basis in the blood. This center has often been referred to as the hibernating region. Was not this therefore an allied state rather than a true coma?

I would like to ask Dr. Sands how much vision returned? Judging by Dr. Sands' experience, how long does he believe he can carry his patient along on post-pituitary administration?

Dr. Sands (closing the discussion) said: I knew by the history that he had a pituitary tumor. The neoplastic pituitary gland was probably inefficient in furnishing the pituitrin required for his metabolism. That was being supplied by the administration of surgical pituitrin. I felt that immediately preceding the coma, there was a demand made upon the pituitary gland to furnish its secretion. This demand was naturally accompanied by engorgement of the neoplastic pituitary and that caused pressure on the iter resulting in increased intracranial pressure which may have been a factor in producing the coma. I therefore removed 75 c.c. of fluid, hoping that this might relieve the intracranial pressure, which it apparently did. I ordered the administration of surgical pituitrin, hoping that this procedure would remove the task from the neoplastic pituitary gland. Moreover, for a period of some five years pituitrin had been given him in the same manner, and obviously with good results. Regarding the urea and creatinin content of the blood, it may be said that they are normal for that particular laboratory. The sugar content of the blood is higher than normal. He also had sugar in the urine; he still occasionally has sugar in the urine. I believe that by giving him pituitrin his life will be prolonged for many years.

AN ANALYTIC STUDY OF STEREOTYPED HABIT
MOVEMENTS IN CHILDREN

L. PIERCE CLARK, M.D.

Author's Abstract

If it were not for the later deterring effects upon the evolution of all types of habit formation, and especially the motor reactions, the persistence of head rolling, head banging and similar disorders of motility in childhood would probably only be annoying to other members of the households in which these children are reared. Although these stereotyped movements are classed with disorders of sleep, they have no connection with the latter except in time relationship. Indeed, the latter is often disturbed but slightly. The autoerotic character of the movements is at once attested to in that that they are regular and have an exact reproductive ceremonial. In the unconscious the movements serve a pleasurable purpose which is not often entirely discarded by the subject's conscious desires, and the children often assume positions in sleep favorable for the act.

The intensity and persistence of the habit ranges all the way from a deep unconscious motivation to simpler types of purposive movements which are partly controlled by rewards or discipline; this simpler pattern is not our special concern, and I hope the discussion will be directed toward elucidating that type whose motivation is deeply buried in the unconscious, as in the severest form of mental torticollis.

From an objective standpoint, an inquiry into the nature and causation of stereotyped habit movements in children brings up our physiologic knowledge of the initial types of movements in infants. We find the first are peculiar wormlike movements of stretching, pulling and turning, a little modified yet possessing many of the types of segmental movements, seen or known to occur in the fetus before birth. One sees in earliest infancy the child first pulling and tugging with its fingers, often hitting himself in an aimless fashion, as seen in the bath, on waking and sometimes on going to sleep; in the latter state the movements are usually made very slowly and come to an arrest as though they were finally blocked or retarded before the full movements were accomplished. These earliest movements are called the impulsive ones. They endure more or less characteristically throughout the first year of infancy. They are seemingly repressed or replaced by other types of movements consonant with the adaptation of the growing organism to its environment. These impulsive movements have no relationship to reality as we know it in adult existence. They are apparently a survival of the intrauterine life. If for some reason, which we shall study later, the repressing forces of development do not operate, the ideational and imitative movements fail to succeed them and they persist in an age of development where they serve no adaptive purpose. The later types of movements, repressed by effort of the will and otherwise, occur during sleep when conscious control is at a minimum. Even in going into and

waking from sleep these impulsive movements persist in all animals including the human. While the movements from their intrauterine inception are slow, wavelike in motion, they may and indeed are capable of taking on all the characteristic deviations in type drawn from all the neuromuscular patterns of infantile behaviors. In some instances, in spite of the rather superficial and logical method of repressing the more benign types of motility disorders of infancy, one is able by training of the will to succeed in repressing them rather acceptably. The egoistic dominance often prevents these children from making a satisfactory adaptation to their environment. They daydream and are willed with idealistic and fanciful wishes of motor or muscular erotism so exquisitely shown in our cases.

The child's attitude toward the habit varies all the way from a sly secretive encouragement of the act to an apparent obliviousness that he is doing it and a sincere conscious desire to be rid of the disorder. This double motivation of desire is often seen and may vary from one attitude to the other; in other words, the response is not dissimilar to that governing other neuroses, and especially that of the ticquer, who suffers from the somatic narcissistic neurosis *par excellence*.

My first citation is that of a boy of six when first seen. When three months old he had a tendency in the daytime to indulge in a rhythmic to-and-fro movement. Soon this habit was dropped and he began rolling his head with his arms in the air oscillating from side to side. This movement persisted in his sleep and on going to sleep despite attempts to break up the habit. This boy was given all sorts of disciplinary measures to suppress the habit, but with little improvement. He went on developing slowly as to physique and held his place in intellectual development. No particular treatment was followed, and at the present time, now in his seventeenth year, his schoolmates observe him indulge in the habit occasionally.

My second citation is a boy of seven when first seen. From the age of eight months he had a habit of bumping his head at night, turning on his abdomen, raising his head very high, then relaxing and letting it drop on his arm which he held in a position so that his forehead struck the forearm. If allowed to do it as much as he wished he would repeat the bumping in perfect rhythm ninety times without stopping. This boy, as in the previous case, was given no special treatment. He is now nineteen years old, physically robust, a good athlete, and has just finished his first year at college. There are practically no nervous mannerisms other than that he appears to be a rather high-strung boy. It is fairly evident that without much suggestion he succeeded in self-directing or sublimating his autoerotic muscular activities into athletics so that his egoistic satisfactions may be said to have been met in socially acceptable ends.

Within the past four years I have had occasion to study two cases psychoanalytically. J. L. when first seen was fourteen years old, up to his age both physically and mentally. For a year and a half before coming under observation he had a habit of swaying his head and arms, grimacing and making clucking sounds. His habit movements ceased in sleep and were indulged in unconsciously during the

waking state. The movements were rhythmic and slow. Unfortunately his parents discontinued the treatment after one month. However, from the analytical material gained in the short analysis we found that the main factor was the boy's unsuccessful repression of of a homosexual trend directed towards an uncle, which in turn was conditioned on his incomplete weaning from the breast. His slow head movement was found to be not dissimilar to the groping action of the infant seeking the breast. The ego continually regressed to different levels until it gained a respite from the homosexual conflict and in the process of analysis he shows all the different degrees and depths of regression. These were sublimated in the reverse order from what we ordinarily see, for as he goes back to the egoistic trends and makes a heterosexual projection he breaks away from his homosexual attachment to the uncle. There was also a corresponding ability to project his libido in the direction of an object choice. When he makes a definite transference to the analyst he gradually loses his habit movements. At present, one year later, he has discarded the larger movements; he still shakes his head occasionally when at home, but his teachers state they have not noticed it in class.

There is abundant evidence in the analysis of my second case, to show that this twelve year old boy is of the neurotic type in which the endowment of primary narcissism of intrauterine life (impulsive movements) was initially at fault, and these defects or traumas were reinvoked again and again by the successive defects of life adaptation. In other words, the several castrations or weanings brought to light confirmed the continuance of the head rolling in spite of all training the parents could bring to bear. The profound organismic importance of these muscular (erotic) movements shows how absurd and superficial is the attempt to attribute their origin to imitation. These so-called habits are only invoked by these later day precipitants and are not their real cause. It is interesting to see how in all probability the initial erotic fixation (or imperfect libido upbiding) prevents the normal development of these muscular activities to pass to their respective goals of later sublimation, or to be discharged off or out at their successive levels of organismic use. These fixations also entail widely remote handicaps of a psychic and social nature. The latter in turn make for compensatory or reaction formations against the castration effects of the handicaps that are very puzzling in interpretation if one fails to consider the widely pervasive effect such a primitive error entails. Although the analytical data obtained are inconclusive, they steadily point to the wealth of material brought to light for continued study and the importance of our realizing that without a better knowledge of the as yet vague evolutions of mind in the infant we shall not be able to understand the neuroses of the pre-genital period.

To schematize our analytic inquiry of four months' duration, on the last case, which may also serve as a summary of this abstract, we find that this boy has in greater part given up the intensive aspects of his head rolling habit but under conditions of stress, fatigue, insufficient sleep and returning to the exciting family relations (there

are four boys in the family, all inclined to highly exciting activities) the symptom formation of head rolling and extraphysical activities returned. Secondly, the head rolling is analogous to the intra-uterine movements which probably are a part of the excessive primary narcissistic endowment in the functioning of the several organs in their organismic unity or activity of the latter as a whole. These movements are reinvoked at each level of successive periods of adaptation and may be added to in proportion as there is an insufficiency of ego libido cathexis. The libido flows back and attaches itself to the primary inadequacy and fixation of impulsive movements of intrauterine inception. The necessity for a prolonged collateral investigation of the withdrawal of libidinal values out of every sort of childish objectification of interest is well shown in this boy. However, this fails, like all purely objective and descriptive phases, to give us a deeper and genetic instinctive value of the whole process which our incomplete and brief analysis here has shown to be rooted very deeply into the whole viability and the utility by which different kinds of voluntary and involuntary functionings of the organism can be used for autoerotic purposes, and it is to the further encouragement of similar types of analysis that this brief abstract of our preliminary study is directed and considered worth while.

Discussion: Dr. J. H. Leiner said: According to the work of Meige, Feindel et al., a person who is addicted to tics and these allied movements is a born ticquer, and always remains a ticquer. Cured of one movement, he acquires another. That has been clinically shown by very extensive studies by the French school. I do not know how long Dr. Clark believes these individuals who have had these tics will remain free of these movements. I have a man who was treated according to the old Bernheim-Nancy school, fifteen years ago. He was an embroidery worker who used his eyes extensively, and developed a severe tic, involving not only his eyes that rolled around their axes, but also affected his risorius muscles, so that he resembled Victor Hugo's "L'Homme qui rit" (the man who laughs). Under hypnosis, one to two séances, these movements disappeared. Seven years later he returned with peculiar jerking and tic-like movements involving his lower extremities. He cleared up again with hypnosis. I have not seen him since. No matter what type of therapy, the question is, are these patients really cured and do they stay cured?

Dr. Morris Grossman: I am very sorry that I did not hear Dr. Clark's presentation, as I came in late. The type of tics I have been accustomed to handle is somewhat different, and are more or less acquired types of tics. I have not used any analytic methods. I believe, as the previous speaker pointed out, that these tics, while they may be on a psychogenic basis, do not necessarily require the analytic type of procedure. The method I have been using has been a combination of the reëducational methods that have been outlined by Brisaud, with the method of inhibition of Oppenheim. With these methods we have been able to get fairly good results that have extended over a considerable period of time. They require, however, very prolonged treatment, and very accurate coöperation by both

the patient and the patient's family. I feel that while a tic can be displaced and perhaps cured, unless these patients are kept continually under observation and direction, the results are usually replacements from one location to another. I have found them the most difficult kind of patient to handle and to obtain results in with the reëducation method.

Dr. Clark (closing the discussion) said: It has unfortunately turned out as I feared in presenting the brief abstract of my studies upon stereotyped habit movements in children; the essential contention of the paper has been misunderstood. The paper deals with habit movements of children and not tics however closely allied in genetic origin the two clinical disorders may appear to be. The first two cases exemplify what the milder types are and how they may be successfully handled with a little care and continued training in self-mastery; but the last two cases were intractable to all systems of training and only after a specific analysis was undertaken was it possible to modify favorably the enduring head rolling habit. Not only did analysis prove of therapeutic worth, but it gave us a deeper view of the intricate nature of the psychologic formation of libidinal habits aggregated about the development of muscular movements. The greatest value is, perhaps, a knowledge of the manner in which erotic absorption of the libidinal release at more primitive levels takes place. Unless we can see this latter improvement one may not say that the disorder is on the way to a permanent elimination. My complete text is now being published in the current (January) number of the *Archives of Psychoanalysis*.

THE PREVENTION OF THE NEUROSES

ALFRED ADLER, M.D., VIENNA, AUSTRIA (by invitation)

Abstract

It is the main goal of every school in medicine to understand and to develop its understanding so that undesirable situations may be prevented. And so my view is directed toward the finding out of the situation and of finding out possibilities and means to prevent the neuroses. Our views are directed toward the education of the child. So far as education has become a science, the style of life of the child, the basis of his whole development, are fixed and accomplished in the first years; all schools agree with this. Therefore it would mean much progress to find out the means to construct and establish this basis in such a way that all the other events of life could not change the child and could not damage it so that it becomes a neurotic person. This consideration applies not only to neurotic persons, but also to what we call problem children and to criminals. In all these classes we can always find a lack if we go back to the beginning of the life of the soul, of the mind, or of the psyche. Individual psychology is interested in trying to find out the way to overcome difficulties, to achieve a goal, the goal of superiority, in which a child can foresee a certain degree of security, happiness, and superiority. In general,

all life is a striving to overcome difficulties and to develop a totality. I can show that there are certain styles of life developing on a beginning of a feeling of inferiority, and therefore they are always occupied in developing personal superiority in other ways. We find in all those persons the greatest striving for superiority. We find that they are always occupied with their own persons more than with others; they have much more interest in themselves because all these children feel as though they were in a strange country, not equal, always suppressed; and therefore egoistic and selfish. It is as though they did not have time enough to be interested in others, and if you look close enough, you will see that they never had any connection with society. They had at most a connection with one person, as a rule the mother. It is therefore understandable that they have certain characteristics which I call neurotic characteristics, always looking more for their own personal interests and for their personal superiority, and not interested in society, and in this way they lack some very important virtues. They avoid every change in life because they are always anxious that they should not be defeated, and so they always try to retain the old situation. Out of such behavior and such attitudes a hesitating attitude is developed and they try to avoid new situations. For all situations in life involve social situations. For instance, school, occupation, love and marriage, all of these are involved in social contacts; but all these persons are lacking in their social feeling. They are not prepared to join with other people in new situations and therefore they are right that they do not try. In these people all the social faculty is lacking.

I will describe a case to you of a girl in a family, the only child for three years, and the center of the family. A younger sister came, which created a new situation; and because the older girl was spoiled and only prepared for this one situation she was not prepared for this new one. She had a feeling of being dethroned; therefore you can guess what must happen, if you can understand the goal of this girl, three years old, to be the center of the family. She must begin to fight, and she was always fighting, and became a very aggressive and attacking child. The younger sister was spoiled, because she was a little, weak child; her development was very slow, and she became the center of the family. The older sister was always fighting; and the younger was held up as an example; she was the center of the family and beloved one. In the great expectations for the second spoiled child we see the same mistake that we saw in the older. This second child could not stand new situations, especially in school. She had never developed a fighting attitude; she had not had to learn it. The older sister never finished anything; never accomplished anything; she developed a hesitating attitude, and the older she grew, the more this hesitating attitude increased. We can see it very plainly in questions of occupation. She played the piano very well, but she was not satisfied because another pupil played better; therefore she ceased. She could not get dressed in time; she could not be on time to take a walk; everybody must wait for her; and in this way she felt herself the center of the house. The older sister married very soon;

the younger sister hesitated, and was 30 years old, and avoided marrying. We see the same faculty, the same trend, the same hesitation. You can guess the choice of such a girl for a husband. To be sure to be the center she chose a man suffering from tuberculosis, very weak. The parents objected, and the man died. She complained for some years, and then again married. The second husband was a man 20 years older than she. You see how she married only into a situation where she could expect to be the center. This older man was very happy to be able to marry her, but he could not always appear to be inferior and to spoil her. He wanted also to be appreciated by her. This he was always expecting, and never got. She was only interested in her own person. Her housekeeping was very poor; she soon became pregnant, and had a child. In her conjugal duties she could not find, like many women, the goal of superiority; she regarded it as many women do, as showing the superiority of the man, and therefore she avoided it. You can see that the whole sexuality of such a woman must agree with her goal in life. She must have such a sexuality as this goal determines and conditions, and as that sexuality was not a pleasure for her, and she did not feel herself the center, she avoided the relationship. She began to be very clean and pure; she exaggerated this desire to be clean in such a wide manner that she avoided sexuality also; she avoided accomplishing her conjugal duties; this is not a very infrequent event among women and also in men to escape from love and marriage. The best means she could find to avoid a second pregnancy was always to be washing. It is not easy to cure such a case, and if we see women with such a wish compulsion then it means that they are judging and sentencing the whole world. It is almost like committing suicide, but so far this woman did not go. She had a connection in life, because she had this child, and she had the ambition not to lose this marriage. She would rather have been divorced, but her ambition did not allow it, and she must remain married although she hindered every consequence of it. She found another excuse to avoid her husband; she began to pray, and her prayers lasted for some hours. If she was disturbed she had to go back and begin all over again, so that these two weapons had the same result; the husband was excluded.

I will not continue with this case, but will only tell you what is lacking in the development of this girl: I have shown you her lack of social feeling; she was always occupied with herself. In the first place she had been the center of the family; when her sister came she lost that feeling of personal superiority. You all know these cases; they are not so infrequent. What does it mean, always to wish to be pure, always to wash, always to criticize other persons, the husband, the whole world? What does it mean? It means: "I alone am pure; others are not pure; I am higher than the others." What does this private praying mean? It is not religion; it is just a means to avoid her husband. If you agree with me that the mistake is made in childhood, and we are looking for the prevention of such a development, where must we look? The answer must be, "in the past," and it means the parents must have made the mistake. The parents we

see to-day are not very able to accomplish this cure. The family, with its great advantages (and I cannot think of another institution which would replace the family), has some disadvantages. I do not believe, for instance, that the family is able to give a child the great significance of independence, of courage, and of the social feeling which we need for the prevention of neuroses. The parents cannot do this; the physicians do what they can, but they cannot prevent, because it is always the finished cases which we see and treat. What can be done in this way? The answer is, I believe, quite easy. We must build up and increase the possibilities and faculties of the school. The prevention of neuroses, the prevention of problem children, and the prevention of criminals can be accomplished only in the school, by the teachers. That is the only point in which we can attack the question. Therefore I believe it is a great field for physicians to teach the teachers, to show them how to recognize in the first stages whether a child has the right development, the right style of life, to face the problems of later life. The problems of later life are always social problems, are always problems in which the child must see that he is working on the useful side, and it means that the child must have enough courage and enough independence and enough self-confidence. I have been working with teachers for fourteen years, and since the teachers understand the styles of life of the children, since they understand how to change the style of life to give them courage, it influences also the parents and influences the environment, etc. I think if you consider this point that we are striving for the prevention of the neuroses, we must join with the schools, and as you have greater power and greater means in New York, greater results could be accomplished. Therefore the advice I would give you in dealing with the problem children and neurotic children is to make stronger the connection of social work with the schools.

Discussion: Dr. L. Pierce Clark said: I recognize the type of neurotics which Dr. Adler so excellently presents objectively. They are well known in the clinic, school, and in private practice. What I distinctly take exception to is in his indicting the environment as an explanation for such disorders. This has long been our practice both here and abroad; but on further and deeper examination we find a train of inner conflicts that offer a much better genetic and psychoanalytic interpretation than that which Dr. Adler draws from parental and social neglect. The latter contributes, but I deny such explanations as being fully causative. His prevention is still the old disciplinary principles brought forward in a new dress. Again, his neurotic type of ego neurosis is but one of many and even larger types of neurotic disorders in children. Time forbids even a short clinical description of these shy, timid and nonassertive types of neurotic children. Disciplinary measures even in his special type fail after a while when the child's strategy and chicanery enable him to circumvent the various authorities of teachers, social workers and parents. Children with antisocial tendencies have long since been given over to an analytic understanding of their inner conflicts, and their latent instincts have been allowed to work for inner circum-

vention, and not outer as Dr. Adler contends. When he says that he can work a lasting change by the method which he has outlined to us this evening, I can only say that, strive as best we may, our efforts by his lines of therapy have been attended by no such results. Happily, we are steadily giving up such outworn concepts of the essential faults in the neurotic child and are obtaining continuously better results.

Dr. Israel Strauss said: I enjoyed Dr. Adler's address very much. In listening to him I gathered that he did not attempt to describe the various forms of neuroses which one finds, either in childhood or in adult life. I gathered that he used one class of neuroses as an example. I believe, as Dr. Clark has said, that neuroses in adults and even in children are not recognized in many cases either by the parents or the school teachers in the early life of the child. When these make themselves manifest either in their difficulties or their asocial adjustment, that manifestation appears in adolescence or later, when it would have been impossible to have handled that individual at the period of early school life. But of course in cases of neurotic children, where their disturbances in behavior and conduct show themselves at an early period, I believe that Dr. Adler is correct that the school should recognize these conditions and attempt to correct them as soon as possible. In order to do that, it would be necessary, it seems to me, not merely to have the social worker, but to have the teaching force which is instructed in modern psychological methods and knowledge, instructed a little bit more than in the use of the terminology of either Freud or Adler. As I meet teachers and others dealing with education in the primary schools, I find that they can use the word "complex" and "inferiority" very glibly. But what they mean by them, or what their significance is, I find very often they have not the slightest idea. In order to carry out a scheme such as Dr. Adler proposes, we have got to educate the teaching force, and we have got to have in the early school teaching force people of greater intellectuality than we have at present. I would not say that the teachers in the higher grades are always better prepared and more intelligent than those in the lower grades, and yet they are supposed to be. I think that is a mistake in our educational system. The teachers who are best trained and most intelligent ought to be in the lower grades.

I would like to ask Dr. Adler a question. I do not know whether it is germane to his address to-night or not, but in his speaking of the development of the neuroses in this case, he spoke of the fact of a child of three being surprised in its position of security by the advent of a rival. There are many families in which there is a child of three before a rival appears. That latency period is somewhat uniform in our modern civilization. I think it must be admitted that those children become the center of attention on the part of the parents and probably are spoiled, if by spoiling you mean that everything is done for them that can be done. Now every family that has such a situation certainly does not find that the child of three develops an antagonism to the succeeding children, nor does it feel itself com-

pelled to assert a superiority. What bothers me in this psychological attitude is that there is something in such a child like the one put before us by Dr. Adler that compels it to recourse to methods and means to satisfy itself so that it does not become neurotic. In other words, if I describe to you a case of pneumonia and tell you of the symptoms, both subjective and objective, it would not satisfy you; you would want to know the cause of the pneumonia, and if I said it was a pneumococcus you would then ask me, the pneumococcus being so prevalent in normal people, why is it that that individual is attacked? In Dr. Adler's scheme there is that one thing that I cannot understand, namely why under some circumstances there is this reaction on the part of the one child, whereas in many other cases of children put in the same position affected similarly by the appearance of another child, it does not show any such reaction. Of course I know you will speak of the instinctive urge; and you will bring me down to the question of the hereditary factor which may or may not be present, but which I have never been able to convince myself positively may have such a tremendous force in the development of that individual, though I cannot deny the possibility. As I say, the question which I put to Dr. Adler may be a little foreign to his remarks to-night. What he said to-night is a matter of great importance in those cases in which early misbehavior or lack of normal response to stimulation manifests itself at an early age.

Dr. Smith Ely Jelliffe said: In 1910, while looking over some books in Hirschwald's Buchhandlung, in Berlin, I first noted *Die Minderwertigkeit der Organe*, by our speaker of the evening, Dr. Alfred Adler of Vienna. What immediately claimed my interest was that here was a working out of an old idea which is to be found in Aristotle, and which is at the basis of Lamarck's ideas on Evolution. Namely, that "*purpose*" had something to do with the working of the organism. Thanks to the Freudian conceptions of the unconscious, mankind had a new way of getting at "*purpose*," and this is what the pamphlet was dealing with. Adler, as a one time student of psychoanalysis, had employed Freud's thought and had given an interesting study. So some years later I translated the pamphlet, and gave it the title "*Organ Inferiority and Its Psychic Compensation*." I had hoped to hear more about this this evening. I was very much disappointed in the general pessimistic calm which settled over the situation when we were told that by the first year of infancy practically the whole story was finished. Consolidation had taken place; crystallization had been effected, and what was to be done? This reminded me of Oliver Wendell Holmes' advice that all children should take great care in the choice of their grandparents. So far as I was able to learn, Dr. Adler has told us that we ought to choose our grandparents very carefully in order that we may escape neuroses. I do not believe that crystallization is fixed at as early an age. In fact, I do not believe in the necessity for this crystallization, even when one gets to the age of oslerization, which I am just entering. In fact, it is against all biology and all fact that if a productive, active, energetic attack upon life and its forces continues, that one necessarily

is fixed at the age of one or two or three or four years, or any other age. There is the saying, as the twig is bent, the tree is inclined. It is a piece of old wisdom, but it is nevertheless not turned downwards and growing into the ground; it has not entirely lost its direction toward the sun.

There are one or two things about the Individual Psychology I was interested in. Our essayist spoke of the individual "seeking a totality," but he did not say a totality of what. He spoke of "attaining a superiority," but he did not say anything about the superiority of what. He intimated that he sought a superiority in the ego, in selfishness, and in antisocial attitudes to the herd instinct (he did not call it that, but I throw it in by way of a more understandable term). I could not help but think he was leaving a very important piece of machinery out of the picture, and that is the machinery which is much older than the ego. Weissmann has spoken of it as the *continuity of the germ plasm*, and if one looks for any bit of mechanism in life, this oldest of all bits of behavior cannot be neglected in any logical construct. Dr. Adler states that "all life tends to overcome difficulties," but he did not say what the difficulties were. Are they difficulties of self-limitation, or are they difficulties of individual continuity? Difficulties therefore of racial production? One important mechanism has been controlling evolution. What mechanism has kept life going since the stage of bacteria, or the lower algae or the lower amebae? One universal mechanism has practically remained unmodified. This Dr. Adler has neglected when he speaks of life trying to overcome difficulties, *i.e.*, those of adaptation to the sex instinct. Dr. Adler emphasizes ego behavior, but any trained biologist knows, as he surveys the innumerable botanical and animal modifications in ego behavior, spines of cacti, shapes of leaves, forms of stems, nature of tooth and claw and hoof, that all of these have been developed in the interest of the sexual mechanism. The ego is important, but not as important as the race. None of this is to be found in the "Individual Psychology." As with the average layman, sex is repressed in this system. It does not exist.

As I heard Dr. Adler's very interesting case, I could not help but feel that he had not given us anything more than a behavioristic series of events. May Sinclair has given us better ones. Edith Wharton has given us much superior material to anything Dr. Adler has spoken of, and I think that Dr. Adler has not come to grips with his material at all. He has not said one word about the inner instinctive urge of the individual beyond this of the ego trend. The ego trend is constantly changing, whereas the continuity of the germ plasm and that which comes out of it is eternal, and has been, world without end, but not yet Amen.

One thing which could be made the subject of considerable debate is the question of categories. Those of you who know anything about systematic zoology or anything about systematic botany, using those words in their generic sense, know that until a certain process was introduced into the interpretation of the different things found in plant life and in animal life, no order came into the study. In the

pre-Linnaean days, when plants were classified according to whether they had long leaves, or thick stalks, or six petals, or five or four petals, or blue flowers, all was chaos, but when Linnaeus utilized the idea; when he studied the stamens and pistils, and got the continuity of the germ plasm idea of the marriage of the plants, then order came out of the chaos. There are still many people who believe that whales are fishes because they swim in the water. Still no zoölogist believes whales are fishes. A much more important series of data concerning reproduction puts them in an entirely different category. Without the knowledge of the sexual life of the whale no one would know it was a mammal. So I would go further and say that until the time comes when we can answer the questions suggested by Dr. Strauss, along some more fundamental lines, we are not in a fair way to properly order our house concerning disease, either from the constitutional or the dispositional standpoints. Just as the biogenetic conceptions introduced order into the natural groupings of plants and animals, I am prepared not only to suggest, but perhaps to assert that until we can apply the same criteria to man and his diseases; until we can properly estimate his psychosexual development in the order of nature, we will not be able to properly arrange his diseases, nor know how best to combat them. Of none of these, to me absolutely essential considerations, especially for the neuroses, have I heard a word to-night.

Dr. Adler (closing the discussion) said: I wish to thank very much the three speakers for the great interest they have shown in my description, and if you remember the title, I have every right to thank you especially so far as you have agreed with the purpose to find out some reasons and some points for the prevention of the neuroses. I think it is not easy to remain around the theme; the theme justifies some wanderings in some far countries. I am not inclined to follow all of those wanderings; but one of those wanderings I believe I must follow, because I have spoken of it before. The unity of the soul postulate in individual psychology, is also influencing what is called the continuity of the species, and the propagation of the species, etc. It is so that in the social life of mankind the question of propagation is agreeing; but if I do not agree with the social cult, if I deny the world, if I deny life, then this whole construction about the filaments of plants is not more important. This is the difference between the soul of the human being and the plant and vegetable. This little difference gives us the hint that the propagation of mankind, the sexuality, is the most important factor in life, a constituting factor, but not the whole. It is always dependent upon what I see in the world, what I foresee, what I want; and if I do not want to propagate then this whole sexual factor is no more existent; and so really it is not vital in our culture that all these deviations, perversions, etc., should be the whole factor. We can always find persons lacking in social feeling.

Another question I believe more important than all others is why one child is attacked by a neurosis and by the roots of a neurosis and another child is not; and if it is not, one would explain it

on the basis of the sexual organs, another would say inheritance; but this is not the reason for this variety. I will propose to you a trial. If you do not agree with me that I can avoid the development of a neurosis, I am sure you will believe me that I can make every child, in spite of his sexuality, in spite of his inheritance, be a wrong child, and I can make every first child, in spite of his sexuality, under certain circumstances, have a neurosis, so that nobody can doubt it is a social factor, and not an organ. You can call it also the herd instinct. I have called it social feeling, and I believe it is even so. Now you understand why this variety can exist, because we have not a wholly trustworthy method. We always make mistakes. Also in the education of these children mistakes are frequent. The most important question that I would like to give you to consider is that you can bring every child to a neurosis. For instance, to be anxious, to be lacking in social relationships, to be lacking in courage, etc., that is always the beginning of a neurosis; but I will only say we can make every child perverse if we use the right method; therefore, I think it is not possible that it is the sexual factor, and the vast number of persons are so far social that they propagate mankind. I can also say that the man who explains the sexual factor as the most important thing to consider will have to explain on which point and with which means he can prevent neuroses.

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY
REGULAR MEETING, THURSDAY, DECEMBER 16, 1926, DONALD GREGG,
M.D., PRESIDENT, IN THE CHAIR

THE SYNDROME OF MENTAL AUTOMATISM AND ITS
RÔLE IN THE PRODUCTION OF THE CHRONIC
HALLUCINATORY PSYCHOSES

PERCIVAL BAILEY, M.D.

Dr. Bailey gave a review of the ideas of M. G. G. de Clérambault, Physician in Chief of the Infirmerie spéciale de la Préfecture de Police de Paris. His address is published in the JOURNAL OF NERVOUS AND MENTAL DISEASE (April, 1927).

Discussion: Dr. C. Macfie Campbell: Dr. Bailey has given us a very interesting glance into one chapter of psychiatry. French psychiatrists have, on the whole, tended to devote much time to description and to the analysis of clinical pictures with the use of somewhat general concepts such as that of degeneration. This method of approach has appeared to be less profitable than the systematic survey of the German psychiatrists, largely under the influence of Kraepelin, with much emphasis laid upon the total evolution of the case. The influence of the Freudian conceptions has developed another line of work. In view of this situation the work of the French psychiatrists has tended to be somewhat neglected, and it is of interest to have presented to us the conceptions of a modern French psychiatrist. Many of the views which have been presented this evening might be open to considerable criticism but deserve scrutiny. It is not possible to come to a personal appreciation of the statements with regard to hallucinatory conditions without a systematic review of one's own material. The worker who stimulates one to review one's personal material from a new standpoint has done a considerable service.

Dr. Bailey: De Clérambault is not at all interested in the situation under which these hallucinations arise. His attitude would probably be the general French attitude that the situation is interesting for the understanding of the psychic content of the hallucinations, but has no dynamic power to cause them.

Dr. Donald Gregg: Would you explain on a toxic theory the often repeated story that a person just before drowning has a picture of his past life come into his consciousness?

Dr. Bailey: I never heard de Clérambault mention this phenomenon observed in drowning, but I imagine he might consider it as a toxic phenomenon.

Dr. Gregg: I have recently been interested in watching a manic-depressive case go through a manic attack. She said that she had

found that her hallucinatory figures were motionless, and that in this way she could tell what were hallucinatory and what were real. It is not often that you find a patient who will analyze hallucinations and try to differentiate the real from the unreal.

Dr. Bailey: De Clérambault's system has been built on the hypothesis that all the phenomena which he includes under the term "mental automatism" are of toxic origin, but this does not necessarily mean that he is a poor observer. On the contrary, he follows the true French tradition in this regard; he is a very keen and accurate and painstaking observer of clinical phenomena, and if he says that in a certain patient the psychosis began with echo of thought and other natural phenomena, and that the patient was not defiant or persecuted at the time, I should be inclined to believe him. He puts dementia precox, paranoid precox and the hallucinatory psychoses in the same group, all being on a toxic basis, their differences depending largely on the age of onset.

AN EXPERIMENTAL STUDY OF "HALLUCINATIONS"

HELGE LUNDHOLM, M.D.

Due to the courtesy of Dr. Morton Prince, an opportunity was obtained to do the following experiments on a very interesting subject, Mrs. O., a former patient of Dr. Prince. The experiments were carried out in the new Department of Research in Abnormal Psychology at Harvard University.

Mrs. O. was formerly a "double personality," known as the case of the "Spanish actress," or the case of "Maria Rosa." She is now well; the different integrates of personality cannot spontaneously come into dominance in her waking self any longer, but they can be experimentally reached in automatic writing, in automatic vision (hallucinations), the latter being the particular object of our study. The three "coconscious" integrates of personality, which we investigated in their relation to the "hallucinations" were the ones Dr. Prince has called "Gracie," "Maria Rosa," and "the Workshop."

These visions of Mrs. O. which we with some hesitation have called hallucinations seem to come spontaneously, independent of conscious thought on the part of the subject. Mrs. O. simply sits down in front of a gray board or any uniformly colored surface and, after a little while, she will begin to describe visions. The three questions we wanted answered by our experiments were the following: How vivid are these images? Are they due to a process of their own that can continue without Mrs. O. thinking directly of them, *i.e.*, can they, in other words, continue and change while Mrs. O's attention is attracted to other activities? Where do they come from?

The observations bearing on the first question seem to indicate that the images in vividness and clearness approximate real perceptions. The experiments bearing on the second question gave no defi-

nite interpretable results. About the experiments bearing on the third question the following could be said:

(1) Two somewhat different methods were used. Characteristics of both were that by the use of hypnosis and automatic writing mental processes were revealed going on coconsciously, while Mrs. O. was hallucinating.

(2) In general, the experiments seem to confirm the results of a previous investigation carried out on the same subject by Dr. Prince. The essence of both Dr. Prince's findings and ours is that the hallucinations of Mrs. D. are closely related to thinking processes which go on outside of her awareness—mental activity of coconscious integrates of personality.

(3) Furthermore, the nature of this relation seems to be this: The hallucinations appear to be translations into the language of moving images of the content of coconscious thought.

(4) The coconscious integrate of personality that, in our experiments was mostly responsible for the visions, was "Maria Rosa," but both "the Workshop" and "Gracie" were also able to induce visions to the wakeful Mrs. O. "Maria Rosa" is furthermore able to induce visions to "Gracie," and may interfere with and modify visions induced by "Gracie" to the normal Mrs. O.

Concerning the wider significance of the experiments, we want to express ourselves with very much caution. It may not be justifiable yet draw any conclusions from these concerning the nature of hallucinations in general. The experiments have first to be repeated on a larger number of subjects and particularly on subjects who do not present the very clearcut different integrates of personality that Mrs. O. does. But the indication of a definite mechanism of hallucinations, obtained even if only in her case, undoubtedly encourages further research and opens up a number of routes of inquiry in a field that is very little explored. It forces upon us a multitude of questions, that each in itself is a psychological problem of considerable interest, as the following:

(1) Are the so-called eidetic images that have recently so frequently been discussed by psychologists of the same order as the hallucinations of Mrs. O., or are they different?

(2) Are the hallucinations of a dementia precox patient of the order of her visions or not?

(3) Are the hallucinations of the dementia precox patient, the delirious and the confused patient all of the same kind and determined by the same mechanism that was underlying the visions of Mrs. O., or are there among the insane different kinds of hallucinations determined by different mental mechanisms?

(4) May some or other of the hallucinations of the insane rather be related to the eidetic images?

(5) Are the auditory hallucinations of the insane analogous to the visual ones of Mrs. O. in this respect that they are translations in the language of the perceived spoken word of thinking processes that the patient is not aware of?

Questions like these are still waiting for their answers.

Discussion: Dr. William Healy: I am interested in this subject from the standpoint of the criteria of judgment of eidetic types and of the question of voluntary imagery versus hallucinations. There has seemed to me all through the work of Jaensch and his fellows at Marburg a certain naïveté of judgment, a lack of attempt to develop any objective judgment; a reliance very largely upon the bare statement of children in regard to the possession of the eidetic type of imagery. And yet with this grave lack we have from the Marburg school proposals to reform education upon the basis of whether or not the individual has eidetic imagery. Ten per cent of children are supposed to have powers of eidetic imagery, and these are to be taught on a different basis from the others. It is quite a question, it seems to me, in this matter, and even in the work which Dr. Lundholm presents of how much "playing the game" there is in the whole situation. How much response is there to suggestion? and how much does the child say about himself for fun or that he may be selected or noticed?

This even comes out in the question of hallucinations or illusions as against possible playing up for recognition by others, which is sometimes very difficult to determine. A boy under our observation, thought to be possibly developing a psychosis with hallucinations, made a play radio outfit of pasteboard and string and in his room at night he heard radio concerts and lectures coming in over his play machine. He barricaded his door and stayed awake long hours to enjoy these. Sometimes he told at great length the sermons, etc., he had heard. Everybody was fully persuaded he had hallucinations. Of course, it was a question of how much he was "playing the game" and how much there was of true hallucinations. The same question came out in the case of the chronic paranoiacs. I once revisited a patient after years and found that in the institution she had become the Queen of England. I saw her in her regal state and as I came into her room she said to me, "You know that now I am the Queen of England, Doctor. You believe that, Doctor, don't you?" So one wonders how much there is of the real and how much of the play element in such situations; how much there is of the creative imagination in the effort to produce certain effects. Just as the case of the boy with the radio, so in no less a person than Cardinal Newman, who tells frankly about developing hallucinations that commanded his moral life. They are reflected in his hymn "Lead Kindly Light"—"And with the morn those angel faces smile, which I have seen long since and lost a while." These angel faces guided him distinctly over many years and were very real to him during parts of his life.

Then one comes to a question of how much any of these things are due to unusual capacities for visualization. There are tremendous differences in the powers of visual memory. When we were interested in psychology of testimony, we found many differences in the ability of people to see over again the things they had deliberately observed or even not paid much attention to. Some people train themselves in the ability to see things over again. One of our best

subjects was a scout leader who had been in the habit of training himself to be observant with his boys. He was one of our best witnesses. One could say a great deal more on this whole topic, but this suffices to show something of the complications.

I should like to ask Dr. Lundholm if he gave calcium by way of experiment to see how it influenced eidetic imagery, as the Marburg school claims it does.

Dr. Lundholm: No. About dementia precox patients, it is generally accepted that it is difficult to hypnotize them. I have never tried it myself. The risks that might follow attempts to hypnotize dementia precox patients, particularly the risk involved in allowing them to build up delusions of influence, has made me hesitate in trying it. It is, therefore, difficult to investigate the question whether or not the hallucinations of a dementia precox patient are of the same order as the ones of Mrs. O. I feel doubtful that it can be proved definitely.

CURRENT LITERATURE

I. VEGETATIVE NEUROLOGY.

2. ENDOCRINOPATHIES.

Kerppola, W. TREATMENT OF PERNICIOUS ANAEMIA WITH THYROID EXTRACT. [Fins. Läk. Hand., Vol. LXV, May-June.]

W. Kerppola, reviewing the literature and citing personal experiences, gives various reasons for his belief that in some cases of pernicious anemia faulty action of the thyroid may be to blame. He refers to a case reported by Gulland and Goodall in which myxedema was associated with pernicious anemia. In another case, observed by Hansen, pernicious anemia developed after X-ray treatment of the neck and thymus had been given for Graves' disease. Although there was moderate enlargement of the thyroid when this X-ray treatment was started, hardly a trace of thyroid tissue could be found at the necropsy. While hyperfunction of the thyroid is seldom, if ever, associated with pernicious anemia, it is significant that certain of the manifestations of hypofunction of the thyroid are identical with those of pernicious anemia. Thus, in both myxedema and pernicious anemia the skin may be dry and desquamating, and the hair atrophic. Faulty action of the thyroid cannot, however, alone provoke pernicious anemia, for this disease is a comparatively rare associate of myxedema. But faulty action of the thyroid may play a part, even a considerable part, in the genesis of pernicious anemia, and the author has applied this view to the treatment of a case of pernicious anemia. For about two months he gave 0.1 gram of thyroïdin three times a day, and he saw no ill effects from this treatment apart from some increase of the pulse rate. Great improvement in the blood picture was effected, the hemoglobin rising from 40 to 60 per cent, and the erythrocytes from 1,910,000 to 2,640,000.

Vampré, Enjolras. PITUITARY TREATMENT IN EXOPHTHALMIC GOITER. [Brazil Medico, Vol. XXXVIII, May 31.]

Enjolras Vampré reports that marked improvement followed pituitary treatment in his six cases of exophthalmic goiter given this treatment.

Halley, G. L. MYXEDEMA IN INFANTS. [Med., Aug., 1923.]

The proper dosage to prevent myxedema this author considers to be 1 cg. of dried thyroid for each six months of age. Begin with small doses and increase if the rectal temperature remains under 37 C. or if the

symptoms do not disappear. Rapid loss in weight, tachycardia, agitation, diarrhea and insomnia are contraindications. Syphilitic infants should be treated for this.

Thomas, E. OCULOCARDIAC REFLEX WITH GOITER. [Rev. Méd. Suisse Rom., Feb., 1924.]

Results upon this test in 1,324 Swiss schoolchildren are here reported. He thinks that depression of the pulse rate during pressure on the eyeball may be explained by a pneumogastric hypersensitivity. This he ascribes to lack of endocrine regulation. The thyroid and the epinephrin-sympathetic system are for him chiefly implicated.

Munk, F. CHAGAS' DISEASE. [Med. Klin., June 10, Vol. XIX. J. A. M. A.]

Munk gives his impressions from a trip to Brazil, and especially on the trypanosomiasis with goiter, nervous and heart disturbances to which Chagas has called attention. He suggests that if Chagas is correct in alleging that the goiter is essential to the clinical picture this is an important contribution to the debated question of an infectious origin for endemic goiter. Infection with *Schizotrypanum cruzi* is responsible for the clinical picture, but Munk ascribes the swellings to edema, similar to that in trichinosis and in sleeping sickness. The paralysis is also a consequence of the infection. The unusual prevalence of continuous arrhythmia and weakness of the myocardium in men and women in the forties is probably due to the inflammatory reaction to foci of dead trypanosomes in the heart. These heart disturbances do not develop till many years after the acute phase in childhood. The infection upsets the balance in the endocrine system, and this may explain the development of the goiter. From this standpoint, Chagas' disease is of great significance and he urges search for a causal infection in all foci of endemic goiter.

Herzfeld, E. GASTRIC SECRETION IN EXOPHTHALMIC GOITER. [Deut. med. Woch., Vol. XLIX, Nov. 16.]

Herzfeld found in the majority of patients with exophthalmic goiter a hypoacidity or anacidity of gastric juice.

Waldorp, C. P. SHARE OF INTERBRAIN IN EXOPHTHALMIC GOITER. [Semana. Med., Aug. 30, pt. 2, 273.]

This observer has gone a step beyond the naïve crass endocrinological notions and calls attention to the probability that all the phenomena of the so-called vegetative sphere are under the control of centers in the interbrain. He presents arguments to prove that these centers are responsible for part of the symptoms in exophthalmic goiter hitherto ascribed too exclusively to the thyroid. The toxic influence from the thyroid

affects them only secondarily, but their involvement entails the tremor and certain other elements of the clinical picture of exophthalmic goiter.

McClendon, J. F., and Hathaway, Joseph C. INVERSE RELATION BETWEEN IODIN IN FOOD AND DRINK AND GOITER, SIMPLE AND EXOPHTHALMIC. [J. A. M. A., Vol. LXXXIII, May 24.]

These observers believe that they have proved statistically that both simple and exophthalmic goiter in the United States are caused by iodine starvation. In this paper, they present the results of their analyses of foods from goitrous (Minnesota and Oregon) and nongoitrous (New England and California) regions. In the nongoitrous regions, the iodine content of the food may be 100 per cent higher than that in the goitrous regions. Larger amounts of iodine were obtained from milk and animal products, and leafy vegetables and fruits, than from wheat. It is significant to note that canned salmon (this is also true of some other sea fish) does not contain as much iodine per ton of dry weight as some leafy vegetables raised in goitrous regions. In fact, milk, the leafy vegetables and some fruits (loganberries) contain the highest amounts of iodine of any land products. If these vegetables are thoroughly macerated or ground in the preparation of the food, it is probable that the iodine can be extracted in the alimentary canal; but with some fruits most of the iodine is in the seeds and skins, and sometimes these are not eaten; when the seeds are swallowed whole, many of them will germinate after passing the alimentary canal, and therefore it may be assumed that they have not been extracted thoroughly in regard to any constituent. To demonstrate the iodine retained from a normal diet, one of the authors, who had lived all his life in a goitrous region, but has always been free from goiter, was the subject of a three-day metabolic period. For a three-day period the iodine intake was 0.57 mg., and there was excreted 0.021 mg., showing a retention of 0.036 mg. in three days, or 0.012 mg. a day. At this rate, it would require about ten years to accumulate 40 mg. of iodine, the normal iodine content of the thyroid. The iodine content of drinking waters was also investigated. The iodine poor waters contained less than 23 parts per hundred billion, and practically all the iodine rich waters contained more than 23 parts per hundred billion. The highest iodine content was 18,470 times as great as the lowest. This answers the objection some people have to putting minute traces of iodine in drinking water in order to prevent goiter. These persons would drink water of another locality containing, say, 15,000 times as much iodine as the water of their home town, without the slightest objection, and, so far as has been observed, without the slightest ill effect. From the quantity in the normal thyroid gland and the rate at which a person may drink water, we calculate that in goitrous regions the iodine should be added up to 1,000 parts per hundred billion (or 1 part per hundred million). This is easily accomplished by adding about one-tenth pound (45 gm.) of sodium

iodin per million gallons of water. The iodin content would then be less, in fact only from one-fifth to one-tenth of the iodin content of drinking water of some of the cities of the United States. Therefore the authors cannot see what objection there could be toward having the iodin content this high. On the other hand, assuming a person drank a liter a day of the treated water, that would give him 0.01 mg. of iodin a day; and since a normal person retains about this quantity of iodin, even though the iodin of the food was entirely excreted, the iodin requirements of the individual would be satisfied.

Stenström, N. REGISTRATION OF TREMORS IN GRAVES' DISEASE. [Hygeia, Vol. LXXXVI, p. 90, Feb. 15.]

N. Stenström has employed an electrocardiographic apparatus to record the tremor of the fingers in 49 cases suspected of or suffering from hyperthyroidism. As the rate of tremor was found to be the same for the different fingers, it was necessary only to register the movements of one finger, which, in the author's series of investigations, was the middle finger of the left hand. Although the tremor was continuous, it proved to be irregular both with regard to extent and time, and the average rate of tremor per minute was 620, the extremes being 460 and 780. When the extent of the tremor was as small as 0.5 mm. it could hardly be detected by the naked eye, and in such cases inspection alone may fail to reveal a tremor which actually exists. A study of the graphic records taken at different times in the same patient showed in several cases that when improvement was effected by an operation on the thyroid or by X-ray treatment and rest, there was a reduction in the rate of tremor. No definite relationship could be established between the rate of the tremor and the severity of the Graves' disease as indicated by the basal metabolism. In cases of paralysis agitans and of other organic diseases of the nervous system associated with tremor of the arms, the rate of the tremor was found to be about 400; in a case of Wilson's disease it was 260. The rate of tremor of the muscles of healthy persons, tired out by certain muscular exercises, was also investigated and found in some cases to be similar to that of Graves' disease.

Blair, E. G., and Kinard, K. SECONDARY OPERATIONS FOR THYROTOXICOSIS. [Jl. Miss. M. Assoc., Vol. XX, p. 335.]

Hyperthyroidism is here naïvely interpreted as the result of thyroid hyperplasia alone. The poison is dependent on altered thyroid secretions.

Frassi, L. EXOPHTHALMIC GOITER WITH TUBERCULOUS THYROID. [Arch. Ital. di Chir., Vol. VIII, p. 289.]

A clinical report of a previously healthy woman of thirty-nine who developed severe exophthalmic goiter, and who died after partial thyroidectomy within twenty-four hours. The pulse had been 90-92; it dropped to 52 during paroxysms of violent dyspnea and precordial con-

striction; weighed 21 gm. A tuberculous process in the thyroid was found on autopsy.

Bircher, E. EXPERIMENTAL OBSERVATIONS IN BASEDOW'S DISEASE. Schweiz. med. Woch., LIV, 54.]

Bircher rightly concludes that Basedow's disease can no longer be regarded as exclusively a hyperthyroid condition. Other glands of internal secretion also play a large part in its causation. Thus the condition has been experimentally caused by the implantation of thymus substance into dogs (fox terriers). In three instances the implantation material was gland substance from human patients suffering from Basedow's disease, and in three instances substance from patients with thymus stenosis. In the first group typical Basedow's disease developed, after the tenth day, definite struma, twitching, general unrest, agitation and glycosuria. These experiments were more conclusive than previous ones in which gland extract was employed. The gland implant attacks nonresistant tissue; the intoxication reaches the blood stream, possibly due to some nervous influence. The susceptible thyroid gland is affected and enlarges. Histologic examination of the struma in these experiments revealed parenchymatous, small follicular diffuse struma tissue, with papillary proliferation and desquamation. Medullary hypoplasia was observed. It cannot be determined in how far the irritative action of the thyroid gland upon the suprarenals was a contributory factor. In one case atrophy of the pancreas was found, as well as diminution of the Langerhans cells in the spleen, and decrease in number and size of the follicles. Thymus material from young subjects presented medullary hyperplasia and that from adults, cortical hyperplasia. The thyroid glands of the experimental animals were removed thirty, forty and fifty days, respectively, after the implantation. It was found that the implant had gradually atrophied. The animals died from eight to ten days after the extirpation of the thyroid gland, following a period of apathy, acceleration of the pulse, muscular trembling, edema, and loss of hair. The clinical picture was that of acute cachexia strumipriva, without involvement of the epithelial bodies. Death immediately followed hypotension and acceleration of respiration and pulse, resembling death due to cardiac involvement in Basedow's operation.

The impression was that, following the removal of the struma, which had developed an action antagonistic to that of the thymus, the suprarenals were no longer sufficiently stimulated, resulting in hyperthymization, which, in turn, caused a disturbance of the pluriglandular system and injured the vascular and nervous systems. The narcosis paralyzed the suprarenals, and death due to cardiac embarrassment ensued. The exogenous administration of iodine may have the same effect.

It may be concluded that the thymus is capable of causing marked disturbance of the pluriglandular system and definite Basedow's disease.

Secondary removal of the thyroid gland results in an acceleration of the impairment of the vital functions.

Williamson, G. S., and Pearse, I. H. STRUCTURE OF THYROID IN MAN. [Jl. Path. and Bact., Vol. XXVI, Oct.]

This study would show that there is an inner functional unit within the thyroid organ. It is of the nature of a lymphatic sinusoid, in which, the epithelium floats enmeshed in a specific plexus of capillaries. The secretion of the thyroid organ is produced and stored in a specific fashion. It is not the same as colloid. Colloid matter is stored after another manner; it is possibly a vehicle for the carriage of some metabolite as yet unstudied.

Nicholson, F. M. AN EXPERIMENTAL STUDY OF THE MITOCHONDRIAL CHANGES IN THE THYROID GLAND. [Jl. Exp. Med., XXXIX, pp. 63-75. Med. Sc.]

Nicholson used the alterations and shape of the mitochondria in the thyroid gland as a criterion of thyroid activity. Guinea pigs were used and tissue was fixed in Pianese's solution and stained with the acid fuchsin and methyl green method for mitochondria. In normal controls the number and appearance of the mitochondria were very constant, but marked alterations were caused by experimental pathological conditions. Interference with the blood supply showed after the third day a shortening and granulation of the mitochondria, so that at the tenth day they presented the appearance of spherules. This response was very delicate, as no change could be detected in the shape of the follicles, in the appearance of the nuclei, or in the condition of the colloid substance. Partial extirpation caused a considerable increase in the mitochondria in the remaining fragment, and they retained their usual form.

Roth, O. DANGERS OF IODINE THERAPY WITH SPECIAL CONSIDERATION OF THE MODERN EFFORTS IN THE PROPHYLAXIS OF GOITRE. [Schweiz. med. Woch., Sept. 13, Vol. LIII, p. 865.]

The author endeavors to show that severe symptoms of hyperthyroidism may be produced, especially in adults, following the use of small doses of iodine in proprietary preparations, such as are recommended in the schools of Switzerland and purchasable in the drug stores. The symptoms receded under suitable treatment only in some of the cases. In one case dilatation of the heart resulted, with perpetual arrhythmia, which could not be relieved by treatment. Another patient, who previously was able to take iodine without injury, suffered from severe symptoms even with the same dose. The tolerance for iodine varies in the same individual at different times. The use of iodized table salt, as has been practiced in some of the cantons of Switzerland, may lead to hyperthyroidism. Unless greater care is taken in iodotherapy, the whole subject of the prophylaxis of goiter may become discredited.

Pauchet. CANCER OF THE THYROID. [Arch. Fr. Belg., April, 1924.]

Cancer of the thyroid usually (9 out of 10 cases) grows on a goiter. It is at the onset intracapsular, later extends outside the capsule. The more frequent form is the epithelioma, the sarcoma is less frequent. The lymph glands are almost always invaded in cases of epithelioma and in a third of the cases of sarcoma. Metastases are frequent in the lungs, liver and bones. The fibrous and the exophthalmic goiter rarely become malignant. The nodular goiter is the one which is most often transformed in a cancer. Signs of cancerization are: a rapid increase in the size of the goiter, induration of the tumor, pain and later on respiratory troubles and dysphagia. The cancers of the thyroid ought to be operated only when one thinks possible to eradicate completely the tumor. One ought to remove the tumor with its capsule and the lymph nodes. Block anesthesia ought to be used. The eventual postoperative complications are tetany and myxedema. Operative mortality 10 to 40 per cent following the extent of the tumor and the operation. End results: on 9 cases, Pauchet had one operative fatality: One patient survived 2 months, another 3 months, 5 a year and one 5 years.

Holst, J. PATHOGENESIS OF EXOPHTHALMIC GOITER. [Ac. Chir. Scand. Supplement, IV. J. A. M. A.]

Holst remarks that this disease interests internists and surgeons, pathologists, oculists and laryngologists as well as gynecologists, neurologists and psychiatrists, and his study of 300 cases took him into all these special fields as well as that of physiologic chemistry. All the testimony thus accumulated points to the formation of epithelial tumors in the thyroid as the essential element in all cases of primary thyrosis, which includes primary and secondary exophthalmic goiter, hyperthyroidism and thyrotoxicosis. The abnormal proliferation of the epithelial tissue starts the vicious circle. Causal treatment must aim to combat this: resection, ligation, roentgenotherapy, alone or combined. This pathogenetic conception explains the occasional spontaneous recovery as due to retrogressive changes which arrest further development of the microscopic epithelial tumors, while there is still enough normal thyroid tissue left to carry on its work. Fatty degeneration of the epithelium may progress to such a point that the symptoms of exophthalmic goiter may yield to those of myxedema. A slow pulse and the absence of alimentary glycosuria in exophthalmic goiter are symptoms that belong to the encroaching myxedema. "The riddle of the sphinx—the cause of the tumor formation—is still unsolved, but the sphinx itself has been dug out until now we can see its entire shape and the base on which it rests, namely, the thyrosis and the exophthalmic adenomas." His article is in German, with thirty-three photomicrograms and a colored plate showing the various phases of the process. He recalls that primary exophthalmic goiter does not occur endemically, while the secondary form is endemic

in most cases. The exophthalmic goiter functions with a variability of autonomy and a mixture of excess and deficit which correspond to the mixture of abnormal tissue proliferation and enhanced tendency to degeneration that characterize parenchyma tumor growth in general.

Speidel, C. C. THE EFFECT OF THYROID ADMINISTRATION ON THE EYE OF THE FROG TADPOLE. [J. A. M. A., Vol. LXXXIV, July 12.]

It is well known that the feeding of thyroid extract to frog larvæ accelerates the process of metamorphosis. One aspect of this change, which may readily be noted a few days after the first thyroid administration, is a definite protrusion of the eyeballs. Huxley and Hogben have pointed out that this is apparently comparable to the exophthalmic condition in man associated with exophthalmic goiter. The object of the study made by Speidel was to determine as nearly as possible the mechanism by which the change in the eye of the thyroid-treated tadpole is accomplished. In the thyroid-treated animals, changes quickly become apparent, both in the size and shape of the eyeballs and in the character of the adjacent tissues. There is some absolute increase in the size of the eyeball itself. This increase is not generally distributed, however, but is localized rather definitely in the anterior region. It leads to a definite protrusion of the whole anterior segment. This process, coupled with the general shrinkage of the adjacent tissues of the face, results in a marked exophthalmic condition. Microscopic sections reveal, furthermore, that the growth process in the anterior portion of the eyeball takes place for the most part in the basal layer of retinal cells in the ora serrata region. In an animal killed six days after the first thyroid administration, these cells show great mitotic activity. This activity is in striking contrast to the condition found in the normal untreated tadpole. No mitoses are here observable. In later stages of thyroid-accelerated metamorphosis, the division rate of these cells becomes somewhat less. It is plain that the thyroid administration has set in motion a chain of reactions, one result of which is a selective proliferative process in the anterior portion of the eyeball. Keeping in mind the anatomic location of the ora serrata, it will be seen at once that growth here means a pushing outward of the anterior portion of the eye. This activity appears to be the chief immediate part of the mechanism by which protrusion of the eyeball is accomplished. Speidel is of the opinion that the marked increase in metabolic rate following thyroid administration is very largely to be ascribed to the increase in metabolic activity of relatively undifferentiated cells. It is, therefore, quite in accord with this general condition that in the eyeball it should be undifferentiated ora serrata that is affected, and of the layers of retinal cells in the ora serrata, the most undifferentiated, *i.e.*, the basal layer. The possible application of these observations to the condition of exophthalmos in human exophthalmic goiter is evident.

II. SENSORI-MOTOR NEUROLOGY.

3. SPINAL CORD.

Garrahan, J. P. PAINFUL FORM OF ACUTE POLIOMYELITIS. [Semana Médica, Vol. XXXI, Dec. 15.]

This three-year-old child had pain in the right hip for some time, but improved under treatment for the supposed arthritis. Five months later the child was returned to the hospital with flaccid paralysis of that limb. The unheeded three or four days of fever before the coxalgia had developed must have been an attack of acute poliomyelitis. In three older children, the disease induced intense pain in the spine; also in one hip joint in one child, and it still limps with this leg. The others recovered.

Sørensen, S. T. DIFFERENTIAL DIAGNOSIS OF ACUTE POLIOMYELITIS. [Hospitalstidende, Vol. LXVI, Dec. 26.]

Six cases in which the clinical picture of myelitis or encephalitis simulated the epidemic poliomyelitis. In some other cases the disease was like that described by Strümpell as encephalitis but the cases here cited recurred without apparent cerebral defects.

Sørensen, S. T. ACUTE POLIOMYELITIS. [Hospitalstidende, Dec. 12, Vol. LXVI. J. A. M. A.]

Sorenson states that the mortality in the ninety-two cases of epidemic poliomyelitis at the Blegdam Hospital 1905-1915, amounted to 6.5 per cent. Death was generally due to paralysis of the respiratory muscles, especially of the muscles involved in expiration. One young man overcame the suffocation from this cause by lying prone with his head hanging over the edge of the bed and a bolster under his abdomen. He repeated this from four to six times a day at first, and he recovered. Sorensen explains the respiratory paralysis as of bulbar origin in the majority, as also in some diphtheria cases analyzed to compare with these fatal cases of poliomyelitis.

Pendergrass, Haymann, Heiser, and Rambo. EFFECT OF RADIUM ON NORMAL TISSUES OF BRAIN AND SPINAL CORD OF DOGS. [Am. J. Roentgenol., IX, 553. Med. Sc.]

As the result of experiments on dogs the authors have arrived at the following conclusions: (1) Radiation of the normal brain with 1,150 mgm. hours, on the surface, is not dangerous to life. (2) Experiments on the spinal cord show that radiation should never be practiced either superficially or by implantation. (3) The microscope revealed important changes after radiation with no corresponding clinical symptoms. (4) Radiation of the brain for 1,000 mgm. hours caused a diffused swelling of the whole hemisphere which was not confined to the radiated area only. (5) Exposure to radium emanations caused serious general symp-

toms referable to the formation of toxins. (6) Radium acts in two ways, on the cell nucleus and on the cytoplasm, the latter causing the death of the cell by a sort of autolysis. (7) The therapeutic use of radium on brain tumors may be recommended, but the dangers must be realized. (8) The experiment on dogs may be applied to the human subject, as death is not caused by destruction of the brain-tissue, but by a sort of toxemia. The maximum exposure to radium is put at 1,150 mgm. hours. A combination of radium and Röntgen radiation is advised, as radium alone will not yield a dose sufficient to destroy the tumor without damage to the brain tissue, and it should not be used for tumors of the cord.

Schwarz, E. CONTAGIOUSNESS OF ACUTE ANTERIOR POLIOMYELITIS. [Schweiz. med. Woch., Vol. XCIII, December 27.]

A study of the 1923 Swiss epidemic. In the first three quarters of the year 123 cases were notified, and in October alone there were 70 new cases. In epidemics in America no sources of infection have been found in 75 to 90 per cent. of all the cases, but in at least half the Swiss cases the source, or probable source, of infection could be ascertained. In those cases in which there was a single known exposure to infection the incubation period seemed to be from three to ten days. It was characteristic of this outbreak that school children and adults were affected rather than infants; in one area, with 90 cases, there were only 33 children under the age of five, whereas there were 35 other children between the ages of six and sixteen, and 22 patients above the age of seventeen. There was also a comparatively high proportion of atypical cases.

Dubois, M. ACUTE ANTERIOR POLIOMYELITIS. [Schw. med. Woch., Vol. XCIII, Dec. 27.]

A survey of the 1923 epidemic in Switzerland.

Vanderhoof, D. ETIOLOGIC RELATION OF ACHYLIA GASTRICA TO COMBINED SCLEROSIS OF SPINAL CORD. [Arch. Internal Med., Vol. XXXII, December, J. A. M. A.]

In a study made by Vanderhoof of 451 consecutive cases of achlorhydria, there were twenty-nine persons with definite evidence of combined sclerosis of the spinal cord. Of these twenty-nine patients, fourteen had pernicious anemia, one had pellagra and in seven the observations were incomplete, leaving seven patients that form the basis of this report. The study of these seven cases would seem to show, however, that achlorhydria not only precedes and accompanies the development of this nervous disorder, but that it is in all probability an essential predisposing cause. Achylia gastrica thus appears to be as constant a finding in combined spinal sclerosis as in pernicious anemia. In one instance neurotoxins, in the other hemolytic toxins, are evidently produced in the

intestinal tract of the person whose stomach lacks the protective or inhibitory action of the normal hydrochloric acid secretion.

Blacklock, J. W. S. CERTAIN ASPECTS OF EXPERIMENTAL TRANSMISSION OF DISSEMINATED SCLEROSIS. [Glasgow Med. Jl., Vol. C, Dec. J. A. M. A.]

In Blacklock's investigation inoculations into animals of cerebrospinal fluid or blood from patients suffering from disseminated sclerosis, or of these fluids after passage through culture in Noguchi's medium have produced nervous symptoms in a little more than one-third of the animals inoculated. Similar symptoms, though in a smaller proportion, have been produced in animals when injected with saline or glycerinated emulsions of the central nervous system of rabbits which have shown nervous symptoms after inoculation with material from human cases of the disease.

Adams, D. K. DISSEMINATED SCLEROSIS. [Glasgow Med. Jl., Vol. C, December, J. A. M. A.]

Adams regards the colloidal gold reaction as of great value in the early recognition of disseminated sclerosis. Of forty-one cases tested, thirty-nine gave a positive reaction. The only other disease which shows an almost constantly positive reaction to colloidal gold is neurosyphilis. The treatment endorsed by Adams consists of the administration of potassium iodid, courses of mercurial inunction and repeated graduated injections of neo-arsphenamin. Initial drastic antisyphilitic treatment having been maintained for about two months, the patient is given small doses of Donovan's solution, thrice daily, during alternate fortnights, for six months. At the end of this period a short rest is allowed, and the whole process is then repeated. Subsequent treatment varies with the individual case, the general idea being that the patient be kept more or less under the influence of small doses of arsenic and mercury.

Nazari. COMBINED SYRINGOMYELIA AND HAEMATOMYELIA. [Riv. Ospedal., Vol. XIII, November.]

This author reports the case of a man, aged fifty-five, admitted into hospital with a history of sudden severe pains in the lumbar region during coitus, inability to move the lower limbs or to pass water, and persistent erection of the penis. The bladder was tapped and 1,800 c.cm. of urine drawn off. It contained some albumin, triple phosphate crystals, and pus corpuscles. There was complete flaccid paralysis of the lower limbs, abolition of all forms of sensation below the umbilical level, and the patient complained of hot and cold feelings in the anesthetic area. There was retention of urine and faeces. Lumbar puncture gave a clear yellow fluid under normal pressure. The patient died of septicemia. At the necropsy an extensive hemorrhage of the spinal cord was found, and also clear evidence of a previous syringomyelia cavity with well defined

limits, extending from the third thoracic segment to the lower lumbar. In one of Gower's cases of hemorrhage into a syringomyelic cord this accident also occurred during coitus. The previous history in the author's case included gonorrhea in youth; when twenty-six years of age the patient suffered for two months with pains in the leg and cramp, and again ten years later. At fifty and fifty-two he suffered from sudden attacks of nocturnal pains in the lumbar region, which were diagnosed as renal colic; at this time he also had sciatica and joint pains. The author gives photographs of twenty-eight sections of the spinal cord at various levels.

Buschmann, T. W. SPINAL METASTASIS OF HYPERNEPHROMA. [N. W. Med., Vol. XXII, p. 439, December.]

Nephrectomy was done for hypernephroma of the left kidney. The patient still complained of pain in the hips and legs. Death occurred about two months later. The necropsy disclosed a tumor mass involving the distal end of the left renal vein and artery, extending into the psoas muscle which involved the left obturator nerve. The mass was characteristic of hypernephroma. Secondary growths were also found in the bodies of the third and fourth lumbar vertebrae, with extension into the dura mater in different lengths, causing pressure on the cauda equina.

Levine, S. A. DIAGNOSIS OF PRE-PARALYTIC POLIOMYELITIS. [Med. Clin., North America, Vol. VII, p. 833, November. B. M. J.]

It is not difficult to make a presumptive diagnosis of preparalytic poliomyelitis with a fair degree of accuracy in many cases, especially during the late summer and early autumn when the disease is most prevalent. Any patient with unexplained fever should be examined for stiffness of the neck, as this symptom is present in nearly every case of preparalytic poliomyelitis. Kernig's sign should also be looked for, though its presence is not so constant. If either or both of these signs are present lumbar puncture should be performed. It is true that these two signs may be present in other forms of meningitis, whether due to meningococci, tuberculosis, syphilis, mumps, etc., as well as in toxic meningism from severe infections such as pneumonia, typhoid fever, otitis media, occurring in children; but most of these diseases can be ruled out by other findings. A normal cerebrospinal fluid practically excludes poliomyelitis, but a diagnosis can be established by an increase in the cell count and a positive globulin reaction in the fluid in conjunction with the other clinical features. In most cases of poliomyelitis the pressure of the fluid is normal, but in a fair proportion it is greatly increased. The cell count in poliomyelitis ranges from ten to several hundreds per cubic millimeter; in most cases it will be from thirty to a hundred or two hundred. If the case is not poliomyelitis the cell count will be normal—that is, below five per cubic millimeter. The type of cells varies according to the stage of the

illness. Not infrequently the polymorphonuclears predominate in the very early stage, but very soon the mononuclears become most numerous, and during the paralytic stage lymphocytes only may be present. The globulin reaction is always positive in poliomyelitis, and may persist for a few weeks after apparent recovery and return of the cell count to normal.

Sullivan, James C. IDIOPATHIC PRIAPISM. [Bulletin of Buffalo General Hospital, Vol. I, p. 69, April.]

Report of a case of priapism which was apparently produced by a tonic contraction of the ischiocavernosus muscle. The thrombosis of the corpora cavernosa, although it helped to maintain the erection, must be considered as a secondary event, since the emptying of the clots only temporarily relieved the situation, and not until all the fibers of the muscle were severed could permanent relief be effected. The original cause of the priapism was not determinable. Leukemia, syphilis, disease of the central nervous system and trauma were not present. The past history was absolutely negative. This is a rare condition.

Maas, O. COMPRESSION OF SPINAL CORD. [Med. Klin., Vol. XX, Feb. 17.]

History of case of a psammoma of the dura at the level of the tenth dorsal. Nine months after the appearance of the first symptoms the tumor was removed with recovery.

Keijser, S. RÖNTGEN-IRRADIATION IN SYRINGOMYELIA. [Nederlandsch Tijdschr. voor Geneeskunde, LXVII, p. 212.]

Keijser reports the results of his treatment of 22 unselected cases of syringomyelia, seen during a period of five years, by Röntgen ray; in many of the cases the disease had lasted for many years. The treatment was applied over the back, varying in each case with the localization of the disease in the spinal cord. Thirteen of the 22 cases showed improvement; one died from an intercurrent disease, but he had improved up to that time. The subjective improvement was greater than the objective; possibly the element of suggestion entered in to some extent. The first benefit seen was a gain in power and a diminution of awkwardness; after that usually there was improvement in perception of pain and temperature sensibility. Various patients stated that their wounds again became painful; this led them to protective measures, so that they returned to the clinic with far less damaged hands. But this improvement in the trophic disturbances was not always preceded by a return of pain and temperature sensibility. In some cases increased reflexes became normal, and in three a Babinski plantar response changed to a normal flexor reflex. The nine unimproved cases were mostly chronic ones at rather advanced age, yet their condition remained stationary over long periods. [Leonard J. Kidd, London, England.]

Laffont, A., and Gaujoux, E. THE PELVIS IN INFANTILE PARALYSIS. [Gyn. et Obstet., Dec., 1923.]

Atrophy and forced limping can modify the pelvis form in this disease so that later obstetrical difficulties may arise in these affected children.

Renesse, H. v. ACUTE POLIOMYELITIS. [Deut. med. Woch., Jan. 11, Vol. L.]

Renesse's observations indicate the probability of transmission of poliomyelitis by the common stable-fly.

Hassin, G. B. A NOTE ON THE COMPARATIVE HISTOPATHOLOGY OF ACUTE ANTERIOR POLIOMYELITIS AND EPIDEMIC ENCEPHALITIS. [Am. Arch. Neurol. & Psychiat., Vol. XI, p. 28.]

Atypical cases of these two diseases show changes in both the brain and the spinal cord. In the former they are those of epidemic encephalitis, in the spinal cord those of acute poliomyelitis. The similarity is so great that a differential diagnosis is exceedingly difficult to make. In fact, some consider both diseases as one pathologic entity. A histopathologic study of two cases—one of acute poliomyelitis Landry's type, one of acute encephalitis, both in children—showed that in both are present inflammatory and degenerative phenomena. The inflammatory changes were in both diseases practically alike, involving the gray and white substances, while the degenerative phenomena varied. Comparatively mild in the case of lethargic encephalitis they were quite pronounced in the poliomyelitis case. Notwithstanding the fact that this was of a shorter duration (only five days), there was complete disappearance of the ventral roots, ventral horn ganglion cells and a marked proliferation of the glia cells. The nerve fibers of the gray matter was replaced by a diffuse and focal glia cell proliferation, the entire motor neurone having been destroyed. In contrast to such a widespread neuronie destruction in the anterior poliomyelitis case, the nerve elements in the encephalitis case were excellently preserved, the reactive glia phenomena being here accordingly much less in evidence. The same is true not only of the spinal cord but of the rest of the central nervous system.

In both cases the central canal contained a great number of hematic elements analogous to such present in the adventitial spaces of the adjacent capillaries and blood vessels. This fact seems to indicate that the adventitial spaces of the blood vessels are in communication with and drained—partly at least—by the spinal canal. [Author's abstract.]

Adams, D. K., et al. PATHOGENESIS OF DISSEMINATED SCLEROSIS. [Quart. Jl. Med., Vol. XVII, p. 129, January. J. A. M. A.]

It has been shown by Adams and his associates that nervous phenomena (paralysis of limbs and cerebellar symptoms) develop in animals which have received injections of blood or cerebrospinal fluid removed from

cases of disseminated sclerosis. Passage of the condition to a second animal has been successful in several instances. Positive inoculation results have been obtained with material both from cases and from experimental animals after transmission through culture. The symptoms developed in about 30 per cent. of inoculated animals, after variable latent periods. Spirochete-like organisms have been found in a proportion of inoculated animals in various internal organs. These spirochetes have been seen in animals affected with as well as in some free from nervous symptoms. Cultivation of the spirochetes has not been successful, and at present their causal relationship to the disease is undecided.

Finkelnburg, R. HEMORRHAGE IN THE SPINAL CORD RESULTING FROM OVER EXERTION. [Mschr. f. Unfallhkl., Vol. CCXCI, No. 7.]

Finkelnburg follows the report of a case with a discussion of the etiology of hematomyelia, as due to direct and indirect traumata, spontaneous hemorrhage, psysical over-exertion, thermic influences, but considers chiefly the grounds of attributing it to physical over-exertion. Here the same assumptions must be made as in cerebral and pulmonary hemorrhage following muscular exertion. In all these cases rupture of a sound vessel may be denied. One may admit the possibility of starting a hemorrhage of the spinal cord by a violent physical exertion but one must assume always that a spinal cord vessel was already diseased and therefore less resistant to changes in blood pressure. A hematomyelia, just as with a hemorrhage of the brain or the lungs, can begin spontaneously without any special external cause. Therefore performance of labor can be an actual contributory cause to be accounted an accident only if it can be proved that the task required an unusual, decided over-exertion. If a task performed once or extended over a brief time has not exceeded the usual limit there can be no accident assumed for indeed in a certain grade of disease a spinal vessel can give way at any time in daily work or in other activity (pressing at stool, running, etc.) Déjeunè has reported similar cases.

Westphal, A. ORGANIC DISEASES OF THE CENTRAL NERVOUS SYSTEM AND THEIR RELATION TO PREVIOUS OPERATIVE REMOVAL OF ENDOCRINOUS GLANDS. [Kl. Wschr., Vol. II, No. 23.]

Westphal gives the history of three patients in whom operative removal of the ovaries, parathyroids or other glands was followed not only by dystrophia adiposo-genitalis, tetany, epilepsy and psychic disturbances but there developed clinical pictures showing that the pyramidal tract was affected. The lesser clinical pictures showed only Babinski's sign or hemiparesis. Severer apoplectiform paralyzes were probably due to hemorrhages in the brain substance arising from toxic action.

5. CEREBELLUM; PONS; PEDUNCLES; MID-BRAIN.

Wilson, S. A. Kinnier. PATHOLOGICAL LAUGHING AND CRYING. [Journal of Neurology and Psychopathology, Vol. IV, p. 299, February.]

This author writes on the problem presented by certain cases of abnormal expression in the guise either of exaggerated or uncontrollable laughing or crying or, conversely, of paralysis, at least in part, of the same mechanism. Among the organic affections apt to be associated with the occurrence of pathological laughing or crying may be enumerated double hemiplegia, pseudo-bulbar paralysis, and disseminated sclerosis. Their appearance after a single hemiplegia has also been observed and the symptom complex is of moderate frequency in certain stages of basal degeneration from diffuse vascular processes and in tumor growths, infective conditions, or vascular degenerations when appropriately situated. In addition to these the author discusses instances characterized by volitional normality, but emotional abnormality of facial movement, namely, those who exhibit a unilateral facial paralysis only when they laugh. In regard to the emotional factor in all these cases, the stimuli are often inadequate and inappropriate. One patient cried when she was spoken to, when anyone sat beside her, when a hand was laid on her arm. Another walked about with eyes turned constantly to the ground; if he so much as raised them to meet anyone else's gaze, he was immediately overcome by compulsory laughter which sometimes lasted for four or five minutes. Why some can only laugh while others can only weep is not easy to determine, but as everyone knows laughter and tears are "near each other." The pathological displays differ from normal in their inevitability, frequency, uncontrollable character, the occasionally contradictory relation of "cause" and "effect" and the extreme facility with which they are induced. It is pointed out that in the expression of emotion the facial and respiratory musculatures are physiologically associated. Sir Charles Bell called the seventh the "facial nerve of respiration." The general conclusion come to is that there are corticofugal paths to the facio-respiratory centers in the pons and medulla independent of the voluntary corticoponto-bulbar tracts to the same nuclei whose exact course is unproven, but which pass close to the optic thalamus. In the production of the abnormal emotional activity under consideration the cortex of the brain actively participates.

Walshe, F. M. R. PROGRESSIVE LENTICULAR DEGENERATION. [Med. Science, October, 1924.]

Since the appearance in 1912 of the original paper by S. A. K. Wilson describing the disease which he named "progressive lenticular degeneration," more than seventy cases of this condition have been reported, and F. M. R. Walshe here contributes a review of present knowledge about this disease. The characteristic symptom of progressive lenticular degen-

eration is the development of tremor and rigidity of the muscles, which is usually associated with dysarthria, dysphagia, spasmodic weeping and laughing, and a slight degree of dementia. Occurring in youth and early adult life, and varying in duration from a few weeks to several years, it is always fatal. The muscular tremor resembles that of paralysis agitans, but is not invariably present; usually, however, it is the initial symptom, and remains prominent throughout the course of the disease. In a small number of cases defective articulation was the first symptom. Occasional silent laughter or weeping attacks occur, passing in slow waves across the patient's face, which is otherwise fixed and like a mask; saliva trickles from the angles of the open mouth. Until advancing rigidity renders the trunk and the limbs immobile no true paralysis occurs, and the tendon-jerks and abdominal and plantar reflexes remain normal in uncomplicated cases. The original lesions described by Wilson include bilateral degeneration and softening of the putamen and caudate nucleus, together with a profound degree of hepatic cirrhosis, which, however, does not give rise to biliary symptoms. A zone of greenish haze at the periphery of the cornea has been described in some cases, and is possibly present, though undetected, in others. German writers have described a "pseudo-sclerosis," which appears to be only an alternative and undesirable name for this condition; H. C. Hall has suggested as a better title "hepatolenticular degeneration." Walshe considers that the disease can no longer be regarded as a system disease of the corpus striatum; although there are indications that the liver is the seat of the primary pathological process, the nature of the pathogenic agent is as yet unknown. Wilson suggested that a toxin elaborated in the liver, and possessing a selective action upon the lenticular nucleus, was responsible for the cerebral lesion. Evidence in favor of this suggestion has been advanced by Barnes, who recently described a family of eight children; four showed signs of hepatic disease, and in two of these there was evidence of progressive lenticular degeneration. Although chronic manganese poisoning is known to be associated with a clinical picture resembling that of paralysis agitans, and with the occurrence of asymptomatic biliary cirrhosis, yet Walshe considers that the doctrine of the selective action of poison upon various components of the central nervous system is not gaining ground. Such obscure and variable factors as lymphogenous intoxications, and the existence of histo-chemical peculiarities in the nerve cells of the basal ganglia, have also to be taken into account.

Kühl, W. GRAFTING TREATMENT OF PARALYSIS AGITANS. [Deut. Zeit. f. Chir., Vol. CLXXXVII, p. 328, October.]

The improvement in four of six cases treated with parathyroid implants from calf or horse, and the predisposition to paralysis agitans noted in a few families, justify further research in this line.

III. SYMBOLIC NEUROLOGY.

1. PSYCHONEUROSES; PSYCHOLOGY.

Banning, P. W. MENTAL AND SPIRITUAL HEALING: [Propaganda Col., J. A. M. A., Vol. 83.]

Medical journals and newspapers have recently received a bid for free publicity to be given a book entitled "Mental and Spiritual Healing: All Schools and Methods." The book is said to be "A Text Book for Physicians and Metaphysicians" and purports to be written by one Pierson Worrall Banning of Los Angeles. The publicity material comes as three pieces of printed matter. They all deal with the alleged fact that Banning's book has brought to its author the "major award" of the "Benjamin Franklin Fund" of London. One of the pieces of printed matter is a photographic reproduction of a news item from the *New York Times*, Jan. 31, 1924. This item is to the effect that more than one hundred and fifty years ago Benjamin Franklin put £100 in the hands of the members of the Society of Friends as a trust and that this was to be invested, with its accumulations, for not less than one hundred and fifty years. After that time the money that had accumulated was to be awarded to individuals who made the "most valuable contributions to science" on the "general subject of cures" and with particular emphasis on the part that "mind treatment might have in the recovery and preservation of health."

The story goes on to state that the first award has just been announced in London and that Pierson W. Banning had received £2,500 as the "Major Award" for his book "Mental and Spiritual Healing"; that Charles P. Steinmetz got the second award of £1,000 for a privately published treatise, "The Nervous System as a Conductor of Electrical Energy" and that a minor award of £500 had gone to a Japanese living in Tokio. So much for the ground work of this story as it appeared in the *New York Times* last January.

Another one of the three pieces of printed matter purports to be a "Feature Sketch" of Banning. This also stresses the alleged claim that Banning had received the major award with Dr. Steinmetz, a poor second. It states, too, that Banning's book was submitted to the Benjamin Franklin Fund Committee "by Dr. Franklin C. Wells, Medical Director of the Equitable Life Insurance Company of New York." Dr. Wells and Dr. Steinmetz are both dead.

Before discussing the book itself, the readers of *THE JOURNAL* may be interested in an earlier piece of press-agent work in behalf of "Mental and Spiritual Healing" that was sent out during the summer of 1923. This consisted of four typewritten pages, legal size, purporting to come from the Albany Chamber of Commerce. It dealt with the "most remarkable case in modern medical science" that had recently happened "at the County Hospital at Albany." The story was to the effect that "Dr. J. T. Everheart," who was in charge of the County Hospital at Albany, had just

announced that one Margaret Cooper who died in the hospital had been brought to life by a Mrs. Elizabeth Smith. Mrs. Smith's stunt in producing this resurrection was said to have been performed after reading Banning's book "Mental and Spiritual Healing"! The bringing back to life of Miss Cooper, we were told, had aroused Albany to a "mob fever of investigation" and all of the Protestant churches and some of the Catholic churches had organized groups to study these startling healing methods.

At the time this came out *THE JOURNAL* made some investigations. It found that, although the stuff was supposed to be sent out by the Albany Chamber of Commerce, it was mailed from Los Angeles. The Chamber of Commerce of Albany, N. Y., repudiated the report and expressed itself as much exercised over this "semi-malicious publicity matter" and stated that it was doing its utmost to run the story down. That organization also declared that it had received many letters from metropolitan and smaller newspapers, as well as from other Chambers of Commerce but that, fortunately, the thing had been discredited generally by the newspapers and no credence placed in it.

Incidentally, there was no "Dr. J. T. Everheart" in the United States, and *THE JOURNAL* learned that Banning was at that time operating under the fictitious trade style "National Statistical and Efficiency Bureau" and that he also claimed to be president of the "Sons of the American Revolution." It was also said that Banning had acted as an organizer for various societies and clubs as well as claiming to be an "efficiency expert."

From what has been said one might expect a book on "Mental and Spiritual Healing" brought out under such auspices to be worthless or worse; it comes up to such expectations. Its physical make-up is crude: it is printed on cheap paper with an inexpensive binding. If it had any worth-while sale it should bring in a handsome profit if sold at 50 cents. Instead, it sells for \$3.50. Considerably more than half the book is "lifted" bodily from various other publications—most of them as scientifically unsound as Banning's own stuff. The whole of Chapter II is taken from an earlier book of Banning's entitled "Psychology, Superpsychology and Higher Phases." In this chapter Banning declares in effect that we know nothing of matter except through "vibrations." Health, he tells us, is due to the "proper attunement of the many varieties and planes and keys of vibration that manifest themselves" in what he terms "the so-called human body." We are told further that "so-called sin, sickness or other abnormal conditions" are due to "inharmonious vibrations." Furthermore, "You can set in motion vibrations that will kill or nullify any harmful vibrations started by others." All through his book Banning glibly but vaguely drags in vibrations. For example:

"If food we eat has ceased to vibrate as to its molecular vibrations as digestible food and vibrates in a different way as food that is bad or decomposing, there is instantly a reaction in the stomach or intestines."

This sentence is characteristic of the amount of knowledge exhibited by Banning both in the use of the English language and in his conception of physiology.

The chapter dealing with "Spiritual and Divine Healing" consists of forty-two pages, about thirty-five of which consist of quotations from Mary Baker Eddy and other followers and imitators of Eddyism. Part of the chapter deals with the "Treatment for Prosperity" as practiced by one George E. Burnell. To quote a few of the Burnell postulates:

"All the power there is, is devoted to my prosperity; I am not afraid."

"There is no reality in the poverty of the poor; there are no poor."

"I know that there are no poor and oppressed; I do not doubt the truth."

"There is no truth in the idea of having to work for a living; life is."

From such investigations as have been made, *THE JOURNAL* does not hesitate to express the opinion that the so-called Benjamin Franklin Fund does not exist and that the alleged "major award" to Banning is as big a hoax as the resurrection stunt at the "Albany County Hospital."

Brinkman, R., and Van Dam, E. HUMORAL TRANSMISSION OF NERVOUS EXCITATION. [*Jl. Physiol.*, Vol. LVII, p. 379, August.]

The chemical processes following nerve stimulation may consist of ionic changes and of production of specific organic substances. As a suitable means of detecting small quantities of organic substances in the solution just leaving the surviving frog's heart the authors used the determination of the surface tension of this fluid. The general result of the experiments was that stimulation of the vago-sympathetic nerve with vagal effect was invariably followed by a decrease of the surface tension of the perfusing salt solution, but that stimulation with sympathetic action was always followed by a definite increase of this tension, so that it rose to the value of pure salt solution. The vagus influence was always accompanied by a decrease of surface tension of the perfusing saline solution, caused by the liberation of some slightly capillary active substance. A sympathetic action of the heart was also at once reflected in the saline solution by a sudden rise of the tension from a process by which the vagus substance was rendered inactive to the capillaries or prevented them dissolving in the fluid.

Krasnogorski, N. SLEEP AND INHIBITION. [*Mon. f. Kind.*, Mar. 25, Vol. XXVIII. *J. A. M. A.*]

The observations made by Shishlo and Solomonoff on sleep provoked in animals by certain conditional reflexes is here continued. He induced several "active points" on the legs of a dog, which were always associated with feeding and provoked salivation, and an "inactive" point, which was without connection with feeding and provoked no salivary reaction. Stimulation of this point led to sleep. Still better results were obtained with conditioned inhibition. This means instituting a stimulus

which inhibits a conditional reflex, if applied at the same time. For instance, the animal was fed when stimulated on the skin. If however a metronome was working when the skin was stimulated, the animal received no food. Thus the simultaneous action of a metronome induced inhibition of the salivation which would otherwise follow the irritation of the skin. The most interesting observation was that this inhibitory influence seems to extend also to other parts of the central nervous system, and induces sleep.

Campbell, C. M. THE PSYCHONEUROSIS. [Amer. Jl. Psych., II, No. 3, p. 367.]

It is becoming recognized to an increasing degree that the study of the psychoneuroses must be approached from various standpoints. The interrelation of environmental, hereditary, metabolic and physiologic causes in producing psychic abnormalities is now taken into consideration. Psychiatrists are no longer as prone to interpret mental states from the psychoanalytical standpoint alone, or indeed from the point of view of any one school alone. It is recognized that the important factor in psychoneuroses is not any particular symptom, but the inefficiency of the patient to adjust himself to his social environment. Efficiency depends upon: (1) the functional adequacy of the various systems of the body, especially of the central nervous and endocrine systems; (2) the constitutional state as regards the crude fundamental emotional reactions, and the more delicate reactions concerned in determining personality; (3) the special experiences which may have sensitized the individual to special topics or situations (conditioned reflex); (4) physiologic factors related to the mode of life, in regard to work and fatigue, alcoholism and other conditions; (5) conditions of life such as unsuitable marriage, distasteful occupation, uncongenial, social environment, etc.

A clear understanding of the root of the condition can only be attained by a careful study of the patient from all these points of view. It is only rarely that any one factor alone is operative. Treatment must consist in modification of any somatic defect which may exist, and in "desensitization" of the patient in regard to topics which have a disturbing emotional content. This may frequently be accomplished by frank and sympathetic discussion which removes any sense of inferiority or fear which the patient may have in connection with the topic at issue. This applies most closely to discussions of the sex life of the individual. It is important to consider individual variations in the reaction to certain situations. One patient may react to fear by fainting, another by inability to speak. Vomiting may be elicited by disgust in one case, and by embarrassment in another.

If the situations to which the patient is sensitive cannot be relieved of their emotional content, the attempt must be made to avoid further association of sensitiveness with situations which should make no emotional demand upon the patient's life. Modification of the habits and

modes of life, and change of uncongenial surroundings to those more suitable to happiness, are of the greatest importance.

It is recognized that every mental symptom is a representative of repressed factors, and is in this sense a symbol. However, the reason why one particular symptom-symbol is chosen to express a repression, in any individual case, and not any other equally suitable symbol, is not always clear. The choice of the symbol may be determined at the psychologic level, or at the physiologic level. Thus, vomiting as a reaction to embarrassment, and palpitation as a reaction to a sensitizing situation, may be based respectively upon gastric and cardiac organic weaknesses. This is in accordance with Adler's theory of the rôle of organic inferiority in the determination of many cases of psychoneuroses. However, cases occur in which there is no demonstrable evidence of organic weakness, and in which some other factor must be sought. For instance, in a case cited, a girl, nineteen years of age presented asthenia and aphonia of an hysteric nature, unaccounted for by any physical defect whatever. She was intelligent and attractive, and pleasant on ordinary interview, but was selfish, malicious, unkind, and meddlesome in the hospital; she tormented the other patients cruelly, stirred up trouble, and shocked prudish patients by references to sexual matters, although she displayed no particular sexual interest or tension. Except for sex trauma (exhibitionism) at the age of eight years there had been nothing in her history to account for her lack of emotional balance.

In another case, of a woman twenty-six years of age, exhaustion, a sense of inadequacy, insomnia, depression, and an abnormal dependence upon her mother, as well as embarrassment in regard to sex matters, and an abnormal curiosity in regard to pregnant women, could be definitely attributed to an endocrine imbalance, resulting in emotional immaturity, disturbances of menstruation and pituitary obesity.

In the case of a child who presented obsessive behavior, tantrums, phantasies regarding the death of her mother, night terrors, and refusal to undress in her mother's presence, no somatic defect could be found. The condition was attributed to precocious stimulation of the sex instinct by injudicious home surroundings. The child was unable to deal adequately with the premature impressions, with the result that a psychosis was formed.

A woman thirty-seven years of age presented religious mania, an obsession for cleanliness, glossolalia, shyness, a period of unconsciousness, and excessive embarrassment in regard to sex matters. Analysis revealed sexual repression, and a dream life of romantic fantasies as a compensation for lack of experience. No somatic defects were demonstrable.

Human adaptation consists in the balance between lower and higher functions. The balance may be destroyed if the claims of the lower are become more insistent, due to alcoholism, peripheral irritation, or external stimuli, especially if the claims of the higher functions are weakened by

the absence of reinforcing stimuli, such as moral support and congenial work.

Karger, P. SUGGESTIVE TREATMENT. [Mon. f. Kind., Vol. XXVIII, Mar. 25.]

Suggestion and orthogenic conditional reflex are here differentiated. He defines suggestion as a representation induced by an outside authority, accepted without criticism, leading to a sensation, inhibition or movement. Whereas an orthogenic conditioned reflex is the activating or inhibiting influence of a regular connection between a performed or omitted action and some agreeable or disagreeable sequela automatically occurring after it—without any outside authority. One observer has called this coupling of an action to a disagreeable sensation modified spanking. [Its mechanism is well understood in psychoanalysis as a form of masochism. The much vaunted use of painful electrical currents by the English is better understood when seen in this light.] In the action of some drugs heretofore thought of as acting through suggestion such failures with *tinctura amara*, brought out the fact that the druggist had substituted a more pleasant concoction. A solution of quinin gave results. Electricity is merely suggestive if it is not painful. Yet it is possible to induce with it a therapeutic conditional reflex, if one uses it exclusively immediately after the pathologic symptom (for instance, enuresis), and in a painful way. The pain must not be represented in any sense as punishment; most of these children had been treated without results with unmodified spanking. The pain must be explained as a regrettable but unavoidable concomitant of the necessary treatment with electricity. If disagreeable drugs are used, the proper direction is not: "Three times daily," but: "A teaspoonful if the bed is wet." In hysterical paralysis better results are obtained with sudden surprise. In anorexia the real objects of the treatment are the parents, who spoil the appetite. The difference between slimness and undernutrition is to be explained.

Levine, B. S., Ph.D. BASAL METABOLIC RATES IN SOME OF THE PSYCHONEUROSES. [Jl. Lab. Clin. Med., Vol. VIII, No. 12, Sept., pp. 2-16.]

A brief review of some of the literature on basal metabolism in its application to the diagnosis of or differentiation between goiter affection and certain, so-called, functional nervous manifestations is given. The object of the review is to expose the tangle of views existing with regard to the subject. In the light of the review of the opinions on hyperthyroidism, neuroses, and metabolism, the writer feels that his study of the metabolic values of some post war neurotics may add nothing definite to the determination of the causes of the afflictions. He, therefore, aims merely to point out the extent of increased or decreased values and the frequency of their occurrence in the neuroses groups studied. Some technical points to be observed in making B. M. R. determinations on emotionally unstable patients are briefly discussed. For purposes of

uniformity and universal understanding, the rates obtained were recorded in terms of plus and minus variation from the Aub and Dubois standard of normal rates for males. The writer, however, prefers the expression "standard of comparison" to the expression "normal standard." The study is summarized as follows: One hundred cases admitted to the hospital were tested for their basal metabolic rates because of the presence of two or more of the cardinal signs believed to be indicative of exophthalmic goiter. Eight per cent were found to be affected with primary organic afflictions, the rest were primary neuropsychiatric types. Fifteen per cent of group as a whole had rates over the plus 10 per cent limit, and 4 per cent below the minus 10 per cent limit. The average of the plus rates totally was plus 7.4 per cent, and of the total minus rates minus 6.5 per cent; the total average of all the cases was plus 2.0 per cent. Less than 30 per cent of the cases had minus values, but only 10 per cent of them were below the minus 10 per cent limit. The results seem to indicate, when compared with results of others, that the group types designated as psychoses affect the metabolic processes in the minus direction, whereas the psychoneuroses tend more to the plus side. "High raters" occurred more frequently among neurasthenics suspected of hyperthyroidism than among any other groups.

A close observation of psychoneurotics with high metabolic rates forced the conclusion that the high rates in most instances are the direct consequences of or rather the necessary response to the mental state of the patient. Consequently any amount of surgical treatment such as ligation or even excision will only lead to an hypertrophy of the remaining tissue. To perform any surgical operation, except the one absolutely warranted and found necessary after a joint consultation of an internist, surgeon, and a competent neuropsychiatrist thoroughly acquainted with the case under consideration, means to introduce into the patient's life new points of fixation, added causes for fear and worry, and hence, an increased demand upon the thyroid. (Author's abstract.)

Cohn, M. THE SUCKING HABITS OF CHILDREN. [Med. Klin., Apr. 22, Vol. 19.]

This author believes that the habitual sucking of fingers has a distinct influence on the formation of prognathism and other deformities of teeth and jaws. (An antiquated belief.)

Foster, L. J. HYSTERICAL PARALYSIS. [Mich. St. Med. Soc. JI., June, Vol. XXII, p. 293.]

This patient had had for five years a spasmodic quadriplegia with contractures and trismus. Strict isolation and persuasion and a daily treatment with static electricity were the means used (on the surface) in the treatment. In two weeks the hands became free and the arms could be moved. The girl was able to chew her food. In a month she was able to walk, but with a markedly hysterical gait. She continued to improve

and was soon able to walk up and down stairs. Two months after her entrance she was discharged walking normally, having no complaints and weighing 105 pounds. The author thinks this is a cure without an idea of why she was ill.

Röper, E. TRAUMATIC PSYCHOPATHY. [Deut. Ztschr. f. Nervhkl., Vol. LXXVII, Nos. 1-6.]

The author uses this term to describe a condition illustrated in a case which he reports where two years after a severe concussion of the brain the disease symptoms made their appearance. Autopsy revealed organic changes which underlay alterations in character, intellect and temperament. The organic findings were minute hemorrhages, necrotic softening, ganglion cell alterations.

Henner, K. TIGHT-ROPE WALKING GAIT IN HYSTERIA. [Cas. lek. cesk., Vol. XLII, Feb. 17.]

A clinical description of some peculiarities in gait in hysterical patients. These patients put the heel of one foot in front of the toe of the other, and the steps were faltering. The impression was that of a person walking on a tight rope.

Schneider, K. FORMS IN WHICH HYSTERIA EXISTS. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

Schneider would exclude from the conception of hysteria that which has been designated as the "hysterical character." Those who reveal this he would designate as "ineffectual." The psychogenic psychoses also should be excluded from the realm of hysterical disturbances. The latter term should be reserved only for those somatic functional disturbances which are psychic in origin and psychically maintained. They may appear in the form of reflex hysteria, expression hysteria and organ hysteria.

Minkowska, F. CHARACTEROLOGICAL PROBLEMS, HEREDITY, AND THE EPILEPTOID CONDITION. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

The writer brings some very interesting results from a study of a family formerly described. She bases her conclusions upon Bleuler's statement that the epileptic shows too little splitting as over against the schizophrenic who shows too much and the syntonik who maintains a good balance. Minkowska finds that in this family, which descended from an epileptic, the insufficient splitting, insufficient activity, the concentration and accumulation of affect run like a red thread through the family history.

Laignel-Lavastine, M. THE NERVOUS ELEMENT IN WORRY. [Presse Med., Vol. XXXI, Sept. 5.]

An interesting discussion of the share taken by the sympathetic branch of the vegetative nervous system in its reaction to emotional stresses.

Roheim, G. PRIMITIVE MAN AND ENVIRONMENT. [Int. Jl. Psa., II, Part 2.]

The author first discusses the phenomenology of totemism which is first defined as "the belief in the existence of a specific magico-religious connection between a human group and a natural species." This may be assumed to be an expression in the language of unconscious symbolism of the "unity which connects human life with nature." The biological connection, intellectually speaking, is quite evident, but the endopsychical knowledge of such a relationship is projected into the belief of a "magical bond." The many imitative ceremonials of animal actions as adaptive-protective mechanisms offer evidence of this subjectively felt kinship. Biologically conceived, in Semon's terminology, "the engrammes of former 'changes' are handed down and survive as beliefs in the possibilities of further change."

Reversal, identification, in which the universe and a dwelling are made one, and then is dealt with in the unconscious of the primitive as the world surrounding him like a second womb. Thus the numerous rebirth ceremonials, and the rebirth symbolizations in psychotic stereotypies and in dream activities. Roheim gives a number of illustrations and relates migrations with the home totems. Cave dwellings are extensively dealt with from the viewpoint of offering special analogies to antenatal experiences and the unconscious influence of such experiences with choice of dwellings. Many cave legends are dealt with in the elucidation of the theme. Similarly the tree dwellings of certain tribes need more study, and if *Pithecantropus* was a tree dweller, Roheim allows himself the suggestion—"As the *Pithecantropus* inhabited trees before he descended to the earth, this descent is assimilated to the birth of the individual which is once more a repetition of the birth of the human race. The tree in which man lives before he is born is the maternal womb, and hence the substitution of the tree for the mother in unconscious symbolism is the breaking through of phylogenesis under the stricture of ontogenesis."

Space conceptions are then taken up. Higher and lower come to express grades in social status. Just as older and younger; the older are *above* the younger. The "old man worship" represents the survival of the infantile attitude towards the father. Hence above and below; Heaven and Hell are naturally radiations. The primitive parallels are abundantly cited and show the development of the gigantic shadows of our Self as conceptions of the environment.

BOOK REVIEWS

Collin, André. CONVULSIONS ET ÉPILEPSIE DES ENFANTS. [Gaston Doin & Cie., Paris.]

It is well recognized that the convulsive tendency is a part of the infantile organization. Certain groups of factors tend to prolong or intensify it. They may be physical or chemical; they may be infectious or toxic; they may be the arrived at results of earlier microscopical or macroscopical developmental arrests; they may be distinctly of a psychological, social environmental nature. These are all discussed very intelligently by Collin, who as chief of a large mental service at the Salpêtrière is in a position to judge these things.

The book also would enter into the separation of convulsion types as seen in childhood. This is done with considerable skill in the short space that a comparatively small book of some 200 pages permits. The short chapter upon acid-base equilibrium is of interest but as yet this general chemical aspect of protoplasm's problems is far too general to permit anything more than thought provoking speculations.

Harris, Wilfred. NEURITIS AND NEURALGIA. [Oxford University Press, London and New York.]

It is a hopeful sign to note the appearance of a true monograph upon an isolated problem or set of problems coming from a responsible medical publishing house.

Possibly no better subject could have been chosen, for neuralgias and neuritides are like the poor, always with us.

The initial classification table is precisely topographical. Periphery, nerve fiber, posterior root, central or fillet, mental. The order followed, however, is pellmell. Multiple Neuritis, Cervical Plexus, Shoulder Girdle, Lower Extremity, Sacralgia, then back to the head and neck, Trigemini (four chapters), Path of taste fibers, Herpes Zoster, Migraine, Geniculate, Glossopharyngeal. Other Cranial Nerves, Facial Palsy, Eighth to Twelfth, Visceral Neuralgias, Spinal Cord, Vasomotor Disturbances, Neurofibrosis. A rather disorderly program and withal a slightly disorderly discussion though full of observations and valuable. It is of the good English consulting room type of book. Sound, and serious but far from thorough and quite devoid of comparisons of his own experience with others. Its chief defect is this insularity.

Schou, H. I. RELIGION AND MORBID MENTAL STATES. [The Century Company, New York.]

In their advertising leaflet the publishers call attention to two features of this book which are in need of minor modification. It is

not true that Dr. Schou is the first medical man to make a study of the religious psychology of the psychoses. He is only one of many hundreds who have done so, even though few have written works more or less directly for the clergy in their effort to handle the less difficult mental situations with which the clergyman early comes in close relationship.

Neither is it the first book written for the clergy about these matters. But these are minor matters in sizing up the work itself.

It is a very readable little book and contains much good sense. The author is a lecturer in Copenhagen University and the director of one of Denmark's neuropsychiatric hospitals. The book primarily would instruct theological students about mental disorders, secondarily it inquires into religious psychology in a general sort of a way, not as fundamentally as James, or Stanley Hall for instance, and thirdly gives a semipopular description of various pathological neuropsychiatric types. It is a small popular book of good intent and well adapted to its audience.

Savage, G. C. OPTHALMIC NEURO-MYOLOGY. [Second Edition. Nashville, Tenn.]

A small work upon the ocular muscles studied from the point of view both as to tone and contractility chiefly of interest to the optometrist but not without some value to the neurologist.

Brugsch, Th. and Lewy, F. H. DIE BIOLOGIE DER PERSON. [Lieferung I. Urban & Schwarzenberg, Berlin u. Vienna.]

A Handbook of General and Special Study of Constitution, is the subtitle of this work, the first portion of which 322 pages is before it.

Apparently the German publishers have regained their stride, for the present work is but one of many of similar grand proportions. It is to be in four volumes. Each section is written by specialists in their province. The present "Lieferung" contains five monographic presentations—all of intense interest and presenting the modern aspect of the "Constitutionslehre." Professor Brugsch, senior editor, opens with a chapter upon the general conceptions of constitution and development of the idea of the person—in the sense that Kraus developed his classical work. E. Straus, of Berlin, has a very successful chapter upon "Individuality," H. Salinger, of Berlin, a statistical study and introduction to method of studying masses, I. Kaup, of Munich, writes an illuminating chapter upon the significance of the conception of the normal in the study of the person, and the final chapter is an excellent, condensed chapter upon the general study of Heredity by Jophannsen of Copenhagen.

The whole work was planned some time past as a contribution to the Special Pathology and Therapy of Internal Medicine, with special regard to constitution and its significance for internal medicine. But the growth of observation and study of the individual himself has been so rapid that the general plan of the book has been somewhat changed to include the rapidly increasing significance of the Individual as a whole in his relation to environmental forces.

Thus the pendulum has swung back again to older foundations, as already indicated by the work of Kraus and medicine must be interested more and more in the individuality—the “Person” as it is here expressed. Hence a return to the old slogan—the patient and not the disease—which is often only a shifting abstraction) should be studied and treated.

If the following numbers are as full of meat as this one, this new “*Biologie der Person*” will fulfill an important function in medical science and art.

Pophal, R. DER KRANKHEITSBEGRIFF IN DER KÖRPERMEDIZIN UND PSYCHIATRIE. [S. Karger, Berlin.]

This is a monograph of a little over a hundred pages, No. 30 of Bonhoeffer's *Abhandlungen* Series, and deals with a subject of great importance in medical thinking. Unfortunately the significance of what disease is, how various are the conceptions, legitimate and otherwise, is an unknown territory in most medical men's mental atlases. We have textbooks, treatises, articles galore, in the very wording of the titles of which it is apparent how naïve are the conceptions advanced. Diseases, as such, in the biological sense of the reaction of the body to a definite form of stimulus, thanks to the comparatively young sciences of bacteriology and protozoölogy, are few and far between. Measles, scarlet fever, smallpox, malaria, trypanosomias, chancre, these are comprehensible in such direct relationships of causative agent and reactionary phenomena. Our naïve science of medicine would like to feel it knows and so in the same sense we speak of epilepsy, migraine, schizophrenia, hysteria, and hundreds more; but these are all abstractions. Thus set in contrast one can speak of the treatment of “malaria”—but to speak of the treatment of “epilepsy”—as a synonymous conception is an absurdity. There is but one “malaria.” There are hundreds of “epilepsies.” Gumma, gunshot wound, glioma, tubercle, mental conflict, parathyroid removal, etc., etc., etc., can be vital links in the long chain of causality in the latter,—yes, there may be three or four plasmodia even with malaria—and so our illustration has intentionally been illy chosen to account for the former.

This is the terrain in which this book labors, not in the language of this introduction, it is true, but in a systematic presentation of what are the concepts about disease and how shall we as physicians think logically and not confuse phenomenological descriptions, anatomical pathological alterations, and etiological factors behind the mask of a technical terminology. The fictional nature of classifications is but illy grasped. Thus the author analyzes these conceptions first for so-called somatic disorders and then for psychiatry. Here he discusses the *Syndromlehre* of Hoche, the anatomical direction of such workers as Alzheimer, and Nissl, the Etiological forms of subdivision, the unitary psychoses, as Kahlbaums initiated and Kraepelin has carried out, and finally the conceptions of reactive formation. These are all very productively and constructively discussed in this well worth while monograph.

Koffka, K. *THE GROWTH OF THE MIND. AN INTRODUCTION TO CHILD PSYCHOLOGY.* [Translated by Robert Morris Ogden. Harcourt, Brace & Company, New York.]

This is a delightful work—stimulating and fruitful—with a new point of view and full of experimental observation. As is fairly well known, during the last fifteen years there has been developed a new psychological school which in Germany has gone by the name of the Gestalt, or “configuration” psychology. It is a reactionary and destructive movement, directed against the assumptions of the older psychological schools, chiefly an attack upon the notions of association, attention, sensation, conditioned reflex, trial and error and related conceptions. An old wine—the psychology of action—is reinforced and put into new bottles and there emerges a psychology which demands that dynamic functional processes shall be described and explained as far as possible in functional terms. Everything must be founded upon experiment and long section psychology—as in the long section psychiatry of Kraepelin—must take the place of cross section associational stimulus, electrical key, kymograph tracings, etc., so beautifully carried out in the brass laboratories of the Wundt-Ziehen days.

Koffka is one of the active workers in this new field and this work sets forth the principles, outlines the experimental methods and applies the story to an understanding of the developing human psyche. It does it in a most attractive manner and anyone who would know of this movement in contemporary psychology must not miss the reading of this work.

Isserlin, Max. *PSYCHOTHERAPIE.* [Julius Springer. Berlin.]

The author entitles this 200 page octavo volume, a textbook for Students and Physicians. In it he has generalized a more or less scholastic series of lectures into a very readable volume. One who has had some experience with psychotherapy, at least the reviewer, finds the work ultrapedagogic and aloof from the actual situations.

When we are told that neuroses are constitutional disorders, what of it? So are our noses and the color of our eyes and our arm-leg length index constitutional in the sense in which the word is usually employed. This does not help any more than the older phraseology of Morel, when “degenerée” was the label behind the neuroses—or the older bit of fustian, “heredity.” “Heredity runs in every family,” so it might be said does “constitution.” These are meaningless scholastic terminologies so far as helping one to understand an individual neurosis.

But not much space is given to this. The author gives a quick résumé of the historical development of psychotherapy, not very full nor satisfactory. Then all psychotherapies are grouped under suggestion therapies. This is another of those scholastic mean-nothing words. Hypnotherapy, educational therapy and analytic therapy are then discussed.

Herein may be found good descriptions of the first, purely peda-

gotic, and largely bookish, a short discussion of the second, and a repetition of his old criticism of Freud in the third, in which there is reluctantly admitted that Freud has really given something worth while. But anathema, the method is all wrong. A bad method cannot give true results, is the boil down of his criticism. In metaphorical terms he says, according to the reviewer's notion, that a nail driven in by a stone is not driven in because one did not use a hammer.

In short the method of free association, the method of symbol formation, and the whole conception of the unconscious—these are not according to Isserlin's scholastic notions, hence they are wrong.

A second part of the book deals with symptoms and symptom complexes all quite generalized.

We find the book entirely too far removed from real medical practice. It sounds like many another written by pedagogues or doctors of philosophy or of psychology or of theology. These are dabbings and often very scholarly but the clinical experience is not there. An excellent textbook for tabloid psychotherapy in a summer extension course at one of our great universities.

Minkowski, M. THE PRESENT POSITION OF THE THEORY OF THE REFLEXES IN RELATION TO THEIR DEVELOPMENTAL HISTORY AND TO ANATOMY AND PHYSIOLOGY.* [Nat. Institut Orell Füssli, Zürich.]

In this work, which had its origin in a report before the Swiss Neurological Society in St. Gallen (June 30, 1924), Minkowski seeks to throw light upon the present position of the theory of the reflexes from the standpoint of the history of their development and of anatomy and physiology. In the introduction the author discusses the definition of the reflex—as a reaction to a definite stimulus which takes place according to law and necessity with the coöperation of the nervous system—and the difficulties associated herewith of limiting the reflexes in the presence of the simpler—aneural—and the more complicated forms of reaction, as also in the biological relation and that of localization. The latter is especially difficult, in so far as the entire organism in a certain sense, and at least in a latent form, takes part in every one of its reactions, and that which impresses us as a reflex constitutes only the particularly evident and manifest portion of the same. In this respect, it is always to be considered that the reflexes, as they appear in clinical or experimental tests, in reality form artificially produced and isolated functional fragments. Therefore an anatomical-physiological analysis of them must have as its starting point the tracing of individual reflexes from the special conditions of their release and their isolation to their natural biological connections.

The second chapter is devoted to the developmental history and the anatomical-physiological formation of the reflexes and begins with a general survey of the development, whereby the author draws

* Reprint from *Schweizer Archiv für Neurologie und Psychiatrie*, Vol. XV, pp. 239–259, and Vol. XVI, pp. 133–152, 266–284.

in large part upon his own experience with human fetuses and infants,¹ together with the material of other authors—especially of biologists from lower animals. The nervous or neural phase of early fetal movements is preceded by a purely muscular or aneural phase, in which the muscles contract upon the basis of their own stimulability. There follows then a neuromuscular transition phase—in the human fetus, toward the end of the second month and in the third month—in which the aneural mechanisms are joined with the neural, whereby the latter, however, is still vacillating, free-moving, and labile. This is true especially for the movements which come directly after the extraction of a fetus of this age under conditions favorable for observation, but probably also for the first movements of the fetus in the mother's body; those which are likely released through internal humoral or visceral stimuli and so lead to the formation of the diffuse and still little differentiated motor reactions which stand in the service of the instincts as a first basis of motility and of the reflexes.

Physical and biophysical conditions come to aid first development of the fetal reflexes, such as the free primitive swimming in a fluid, the elasticity of skin and muscle, the coherence of the different parts of the body, etc.; further, especially hereditary-mnemic characteristics of a physiological nature, as the great stimulability of the fetal musculature and the almost unlimited capacity for irradiation of impulses within the fetal nervous system. Proprioceptive and neuroceptive stimuli assist in the further development of the fetal motility, also those from the labyrinth, which begin to function early. All early fetal reflexes are distinguished through the tendency to extend themselves more or less over the whole fetal organism and their especially great variability. In the sense of localization, the early fetal reflexes on the part of the trunk and the extremities are located in the spinal cord; those on the part of the head and the face—*e.g.*, the oral reflex—reflex closing of the mouth by the touching of the lips or the tongue—in the oblongata; through which the diffuse and, so to say, amorphous character of these reflexes correspond to the completely embryonic condition of the fetal nervous system.

The further development of the fetal reflexes is characterized by the fact that in that which takes place at first apparently without reflexes and which is extremely variable, certain guiding laws become noticeable; and a certain limitation of the irradiation, that is, of the nonreflex zones, appears little by little. In an anatomical-physiological connection this change common to all rests first upon a change in the elements of the spinal-reflex arc itself, then upon the entrance of new, first still spinal, but then also supraspinal, components into the mechanism of the same. Thus the author believes in regard to the foot-sole reflex in the fetus of four to six months, that he has proved the addition of a tegmental component to the original spinal mechanism (*Schweiz. Archiv f. Neurol. u. Psych.*,

¹ Revue Neurologique, 1921; Schweiz. med. Wchschr., 1922; Schweiz. Archiv f. Neur. u. Psych., 1923.

13, 1923). This entrance of new components, as *e.g.* of the tegmental, then of the mesencephalic, of the cerebellar, of the basal-ganglionic, and finally of the cortical, follows indeed in a definite order, but mostly so that the later ones with their activity set in at a point of time when the older ones have not yet concluded their development.

After birth those reflexes are first perfected which owe their origin especially to visceral, humoral, or appetitive stimuli, as the nursing reflex—sucking—that of reflex crying, the kicking-movement reflex of the legs, etc.; then also to the environmental reflexes—labyrinthine reflexes, approaching reflex, etc. To the locomotor reflexes a further, successive development of this or that reflex (illustrated in the original) is added on the part of the sense organs. From the point of view of localization this phase about the time of birth and in the first months thereafter in man may be designated as predominantly a tegmental, mesencephalic, and cerebellar—especially paleocerebellar—one, yet the cerebrum already exerts a certain, to be sure chiefly latent, influence upon the reflexes. Toward the end of the first year of life, the purely cortical influence begins to increase and proceeds then continuously, so that most of the reflexes acquire cortical components, which may manifest themselves differently whether in form and direction of the reflex—as *e.g.* in the foot-sole reflex. The fetal irradiation of the reflexes diminishes still further after birth, but continues to exist in latent form and can, even in the adult, under special conditions—*e.g.* by particularly intensive stimuli—pass over into a manifest form.

The author grants a special discussion to evoked reflexes as they have been studied by Pawlow and his disciples and in connection with those studied by Bechterew and others. The peculiar mark of these reflexes, in which we have to do with a stipulated and temporary arrangement between stimulus and reaction, the conditions of their development and eventually their retrogression, if the stimulus called forth or the reflex is not “fixed” through those unconditioned—and its localization, in the cortex, are discussed one after the other. The striking analogies between development of conditioned reflexes and the ontogenetic development of reflexes in general—original general irradiation and consequent successive differentiation and specialization of the reflex, its restriction to the definite reflexogenous zones and reflex pathways is pointed out. To this is added the thought that certain structural analogies exist corresponding to these functional facts, inasmuch as the cerebral cortex contains also in adults elements, those which according to their structure and their mode of functioning stand nearer fetal elements than can those more highly differentiated and further-developing.

With conditioned as well as with nonconditioned reflexes, the outcome of development is not a fixed and unalterable but always a more or less labile and plastic one, whereby only the grade of plasticity and alterability differs. Thus the distinction between conditioned and unconditioned reflexes is only a difference of degree,

not one of nature. Visceral, vasomotor, pilomotor, oculocardiac and similar reflexes are briefly touched upon in an appendix.

The third chapter deals with the destruction of the reflexes, which is discussed from the standpoint of comparative psychology with comparative picturing of the disturbances, especially in the cat and dog, in monkey and man. Examples are given of the injury of the cortical components of the reflexes and movements through lesions of the cortex, of the internal capsule, etc., of the tegmental components through the midbrain and tegmental lesions, of the general dropping out of cerebral factors through total or partial transverse lesions of the spinal cord. It is particularly pointed out that a relative incongruity must arise and actually does exist between the definite manifestations of destruction in pathological disorganization of the reflexes and those physiological structural elements which appear most widely in the earlier developmental stages. And in the forms of activity through which the destruction of the reflexes chiefly passes in the course of time, we have to do not with a repetition of the ontogenesis but with a peculiar evolution which often accords with the conditions of the developmental history, but without being identical.

The author gives a special discussion to the foot-sole reflex, together with its condition after transverse lesion of the spinal cord, whereby he emphasizes the existence of a pure spinal-plantar form of the foot-sole reflex and analyzes along these lines the modes of its evolution (progressive or regressive).

The final chapter is devoted to the important and complex problem of the relation of the reflexes to the instincts, their close interaction, the principle of their relative demarcation, their objective biological purposefulness and the limitations of the same; then the disturbance of instinctive-reflex discharge under abnormal experimental or clinical conditions. A full literary register closes this valuable work.

Kretschmer, Ernst. MEDIZINISCHE PSYCHOLOGIE. [Dritte Auflage. Georg Thieme, Verlag., Leipzig.]

This third edition of Kretschmer's Medical Psychology is a much rewritten, revised and enlarged work. It has caught on, as it were, and with the author's recent appointment as Professor of Psychiatry at Marburg and the steady growing interest in his Körperbau conceptions Kretschmer is one of the promising younger psychiatrists of Germany.

The work before us needs only to be briefly commented upon. We already have commended it but the additions here are worthy of a short citation. A very definite movement has been going on in medical psychology in recent years. The intensive working of the pathophysiology of basal ganglia, the new eidetic researches of Jaensch, the psychopathology of epidemic encephalitis, the newer work in the vegetative nervous system and the midbrain and interbrain nuclei, the body structure researches, and the endocrine studies—all these are opening lines of active advance which have been incorporated into the new edition. These the author has made a part of the psychologi-

cal discipline and has given us practically a new and much more fascinating book than any of its predecessors. It would make a worthy companion in English to the translations of his small work on Hysteria, published in the Monograph series, and the work in Body Formation and Character published in the International Library of Psychology.

Wilson, S. A. Kinnier. APHASIA. [Psyche Miniatures. Kegan Paul, Trench, Trubner & Co., London.]

The enterprising editor of *Psyche* and the International Library of Psychology, Philosophy and Scientific Method, C. K. Ogden, has projected a series of small monographs called "Psyche Miniatures." Dr. F. G. Crookshank has written one upon "Migraine" and the second is the volume before us upon "Aphasia."

We are bold enough to say that nowhere within such small compass have we read so complete, detailed, scientific and yet at the same time so delightful a discussion of the complicated problems of aphasia. It is a model presentation and we congratulate both author and projector of this "Psyche Miniature" series.

Koch, Richard. DAS ALS OB IM AERZTLICHEN DENKEN. [Rösl & Cie, Verlag, München.]

At the Frankfort University they have a chair for the History of Medicine and its Philosophical Foundations. The author is a Privat Dozent of this faculty, and here contributes a small monograph on the *Vaihingers*, "As If," conceptions as applied to present-day medical thinking.

Few of us realize how sloppy our medical thinking is. M. Fishbein of the J. A. M. A. has given us an interesting résumé of the superstitions and bits of medieval logical lumber with which most medical men clutter up their mental storehouses. Sinclair Lewis, in his "Arrowsmith" has put a paranoid tinge upon his caricature of the medical mind—just as needed as were the earlier criticisms of Pliny or the later farce comedies of Moliere or Bernard Shaw.

With *Vaihingers*, Philosophy of the As If—as here applied more specifically to medical thinking, one may realize how dogmatic and stodgy is our pretended conception of logic as so applied, and so we should welcome this small brochure as a tonic breeze offering an excellent opportunity for much mental housecleaning of cobwebby thinking processes.

Pfister, O. DER SEELISCHE AUFBAU DES KLASSISCHEN KAPITALISMUS UND DES GELDGESISTES. [Verlag. Ernst Bircher, Bern. Fr. 3.]

This well known pastor of Zürich who has contributed so much to the literature of pedagogy and more particularly to the psychoanalytic foundations of a rational and individual pedagogy here contributes as Vol. 7 of a series of small monographs upon "*Seelenkunde und Erziehungskunst*" an interesting study upon the psychological evolution of capitalism and the money interest.

This is no desk sociological statistical examination of the developments of man's interest in possessions, as chiefly symbolized by money, but a subtle study of the ego motivations of mankind, starting from a psychoanalytic study of religion by Max Weber.

The sociological analysis and the psychological analytic standpoints are carefully gone into and compares both as to the development of capitalism and of money values. Especially interesting is his discussion of the pathological aspects of "Money Values" or "Geld Geist," particularly in their relationships to what in psychiatry is known as the "Compulsion Neurosis."

This is a fascinating little monograph and throws a number of interesting spot lights upon man's interest, or lack of interest, in possessions, individual and collective.

Krabbe, Knud H. L'ORGANE SOUS COMMISSURAL DU CERVEAU CHEZ LES MAMMIFÈRES. [Bianco Lunos, Copenhagen.]

A well illustrated and carefully considered small monograph upon the comparative anatomy of the subcommissural body originally emphasized as a special organ by Dendy and Nicholls in 1909 and 1910.

Krabbe has gone through a large series of manuals and shown its variations and modifications. In man it is more rudimentary in the adult than in the embryo. As to its function, if it has one, the author discusses the literature and himself inclines to the conception that it probably has something to do with the movement of the cerebrospinal fluid.

Liertz, Rahban. WANDERUNGEN DURCH DAS GESUNDE UND KRANKE SEELEBEN BEI KINDERN UND ERWACHSENEN. [5th Auflage. 13-16. Tausend. Verlag. Joseph Kösel and Friedrich Pustet, Münich.]

A popular work on neuropsychiatry from the psychoanalytic viewpoint written by a sympathetic student of human nature and which has gone into 16,000 copies must have something to it. It has. It is sound, serious, good psychiatry and helpful to human beings. Furthermore the author is a good churchman—and a Catholic—and his work shows a broad humanistic understanding, such as has always been found in "religion, pure and undefiled."

Hess, W. R. UEBER DIE WECHSELBEZIEHUNGEN ZWISCHEN PSYCHISCHEN UND VEGETATIVEN FUNKTIONEN. [Orell Füssli, Zürich.]

The editors of the Swiss Archives of Neurology and Psychiatry have instituted a series of Abhandlungen. Minkowski's "Study of the Reflexes" was the first contribution, the present volume is No. 2. Bruns has a volume upon the Cerebellum.

The present study deals with a subject of more than academic interest; indeed it is very vital, since it may be stated that we shall really never know much about our feelings, emotions, moods, etc., without a better knowledge of vegetative neurology. This study the

author here outlines in this 60 page pamphlet. The general physiology of the vegetative nervous system and its relation to the somatic sensori-motor system is first discussed. Then sleep and its functional aspects and its being a function of the vegetative system is taken up, while the third and last chapter deals with the central coördinates of the visceral stimuli, and the system in its psychical activities especially in pathology.

A very readable, well informed and valuable monograph which contains a wise summary of the trend of the subject of the relationship of the psyche to the nervous system quite in line with v. Monakow's well known and fascinating little volume upon "Emotions, Morality, and the Brain."

Bridges, James Winfred. AN OUTLINE OF ABNORMAL PSYCHOLOGY. [Third Edition. R. G. Adams & Co., Columbus, Ohio.]

A first edition of this work appeared in 1919 and it has found sufficient favor now to go into a third edition. And one can very readily account for this for it fills a need. It is an outline strictly. It lists the extremes of behavioristic phenomena, often called abnormal; gives an idea of some of the tentative syndrome groupings which are current in the study of psychiatry of the past 30 years, and enters somewhat into the field of causality. It is meant for students of psychology per se, for medical students and for social workers.

The chief changes or additions in the present edition consist in a revision of the chapter upon definitions and classifications, an amplification of that on emotions and instincts, and a rewriting of the chapter upon intelligence and personality.

In the main the book remains, as it was, an excellent series of outline definitions well arranged and adapted for a quick orientation of the situations involved.

The bibliographies are ample and, for the most part, fairly well chosen.

Dennig, Helmuth. DIE INNERVATION DER HARNBLASE. [Julius Springer, Berlin.]

A complete, precise and valuable discussion of the physiological and clinical factors of interest in the activities of the bladder with a series of original personal researches.

There are but 100 pages in this No. 45 of the Springer Monographs on neurology and psychiatry, but they are filled with pertinent matter.

Jolowicz, Ernst. DIE PERSÖNLICHKEITSANALYSE. [Georg Thieme, Verlag. Leipzig.]

This is a neatly written appeal for a special judgment of the personality of a patient that would prepare the physician to choose the particular variety of treatment for a neurosis. He takes the

position that different personalities need different modes of treatment and he outlines in very simple, even naïve form, the indications that would make him choose hypnosis, Frank's hypnotherapy, Coué's—*ce passe—ce passe*, Adler's Individual analysis or Freud's psychoanalysis. In spite of the catholicity shown it seems the general attitude is superficial although the book is not without merit.

Hermann, Georg, and Pötzl, Otto. UEBER DIE AGRAPHIE UND IHRE LOKALDIAGNOSTISCHEN BEZIEHUNGEN. [S. Karger, Berlin, Mk. 24.]

This is No. 35 of the Bonhoeffer Abhandlungen and a worthy mate to its high class predecessors. Coming from Pick's old clinic, now under Pötzl's leadership, one can readily understand the interest in the title and can surmise that the Prague clinic anamneses will be rich material for later arriving structural investigation.

The monograph fills 380 pages and is readily divisible into two sections. The first contains a clinical discussion of the authors' material and the second deals with a complete review of the literature in extension to that already brought in in the first section.

This first section contains eight chapters. They fill a little over one half of the book. The details are not compressible within the limits of a book review. The author first discusses a case of tumor of the right parieto occipital convexity in an ambidextrous person. Agraphia was the first and last of his symptoms. Following extirpation of the tumor, localized in the angular gyrus neighboring on the second occipital lobe, a gradual regression of most of the symptoms took place. The case is extraordinarily interesting, especially as recurrence of the tumor took place and the patient later died. A second chapter deals with the relationship of agraphia to related disturbances. A third deals with the possibilities of development of a parietal agraphia of the type under consideration and the general mechanisms involved in the writing function. The relationships of a central graphic region with different motor systems is taken up in a fourth chapter. The fifth compares the autopsy material at the command of the authors with other autopsied cases. In a sixth chapter a number of cases are presented in which a right brain local lesion has brought about an agraphia of the parietal type described by the author. The influence of right and left is much less pronounced in agraphic disturbances than in speech. This problem is continued over with the seventh chapter where the phenomena of mirror writing in the left hand serves as a partial basis for a complete discussion of the interrelationships of the two hemispheres and the causes for predominance of right handed activities. Pfeifer's contribution is minutely analyzed.

The eighth chapter gives the microscopical study of personal cases compared with those of similar studies. Finally the whole discussion is brought to a focus in chapter nine.

Here is certainly a masterly study of the subject of agraphia. One that will remain a classic for some time to come.

OBITUARY

DR. CHARLES FOIX

French neurology as well as that of the world has lost one of its outstanding bright lights in the death of Charles Foix of Paris. His was a brilliancy which by some had been compared with that of Charcot, and his loss is one that is deeply to be regretted. He died of an intestinal condition which was operated upon to no avail on March 22, 1927, only forty-five years of age.

He was a gold medallist in 1910, made *médecin des hôpitaux* in 1919, and *agrégé* in 1923. He was a student of the Pierre Marie, of Souques, Dufour, Achard and Sicard. He had the fire and the brilliancy and a little of the physiognomy of Brissaud.

His earlier work with Achard was biological and hematological, but he soon devoted his interests to clinical neurology where he made many useful contributions to cerebellar symptomatology, and more especially elaborated the "defense reflexes" or "cross reflexes," the medullary automatic reflexes, synergisms and mesencephalic and diencephalic physiopathology. His neuroanatomical work was of the highest quality; his latest work with Nicolesco upon the central gray nuclei and the subthalamic regions will remain a classical monument of fine work.

C. DA FANO, M.D.

Dr. C. Da Fano, F.L.S., Reader in Histology at King's College, London, died with unexpected suddenness at his residence in London on March 14, 1927, in his forty-eighth year. By his death medical science in Great Britain loses one of the ablest exponents of histology.

Corrado Da Fano was the third son of Commendatore Alessandro Da Fano. He received his early training in histology in Golgi's institute of histology and general pathology at the University of Pavia, where he graduated M.D. in 1905, and later (1912) became *Libero Docente* in morbid anatomy. He obtained a traveling fellowship at Milan and worked in Ziehen's neurological clinic in the University of Berlin in 1908, and in the following year with Dr.

Bashford at the Imperial Cancer Research Fund, London. After a period of work at Groningen he returned to Milan University as vice-director of the pathological institute. From 1915 to 1918 he served as captain in the Italian Army Medical Service on the Italian front. In 1918 he became lecturer in histology at King's College, London, and in 1922 was given the title of reader in histology in the University. Dr. Da Fano specialized in the histology of the central nervous system, and his advanced lectures attracted large audiences; the histological specimens by which they were illustrated formed a complete and noteworthy collection. His researches, published in a series of about sixty papers in various journals, were mainly concerned with the Golgi apparatus in cells and the special lesions of the nervous system in such affections as encephalitis lethargica. He had a very extensive knowledge of foreign languages, and he generously devoted a considerable portion of his time to acting as one of the editors of *Physiological Abstracts*. He married in 1915 Miss Dorothea Landau, and leaves a son and a daughter.

HENRY WALDO COE

Henry Waldo Coe, Portland, Ore.; Long Island College Hospital, Brooklyn, 1880; member of the House of Delegates of the American Medical Association, 1906-1907; member of the American Psychiatric Association; formerly professor of nervous and mental diseases, Willamette University Medical Department; at one time member of the North Dakota and Oregon State legislatures; past president of the North Dakota State Medical Association and the Oregon State Medical Association; founder and medical director of the Morningside Hospital; on the staffs of the Portland and Multnomah County hospitals, the Washington State School for Defective Youths, Vancouver, Wash., and the Oregon State Hospital for Insane, Salem; since 1893 editor of the *Medical Sentinel*; aged sixty-nine; died, suddenly, February 15, 1927, at Los Angeles, of heart disease.

Dr. ANTON HEVEROCH

Dr. Anton Heveroch, Professor of Neurology and Psychiatry in the Czechisch University of Prague, died March 3, 1927, aged fifty-eight years.

NOTES AND NEWS

The *Zeitschrift für psychoanalytische Pädagogik* is a new psychoanalytic publication just received. It appears monthly at a cost of one mark per number. Dr. Heinrich Meng of Stuttgart is the editor, and the Hippocrates Verlag, Stuttgart, are the publishers. It is to be devoted to pedagogic psychoanalysis. The first number contains short articles upon the Value of Psychoanalysis for Pedagogy by Ernst Schneider, Notes upon Conscience in Children and Its Formation by Hans Zulliger, The Dream of a Six Year Old Girl by H. Nunberg, The Problem of the Delinquent by A. Aichorn and a shorter communication on Therapeutic Child Analysis by J. Harnik.

CHAIR OF PSYCHIATRY IN NEW SOUTH WALES

At a meeting of the Senate of the University of Sydney, New South Wales, held in December, 1926, Dr. William S. Dawson was appointed to the professorship of psychiatry rendered vacant by the retirement of Sir John Macpherson. The new professor is a graduate of the University of Oxford (B.A. 1914, M.A. 1918, M.B., B.Ch. 1918, M.D. 1923), is M.R.C.P. London, and holds the Diploma in Psychological Medicine of the University of London. He served for a period of three years in the great war. Dr. Dawson is at present a lecturer in clinical psychiatry in the University of London and senior assistant at the Maudsley Hospital, London, where he has been engaged in teaching students, graduates, and medical officers of mental hospitals. He has had an extensive experience in early cases of mental disorder, and has written papers bearing on psychiatry. He recently spent ten months in the United States as Rockefeller Research Fellow, studying the psychiatric training and the organization of social workers, but principally engaged in research in clinical psychiatry under Professor Meyer at the Phipps Psychiatric Institute, Johns Hopkins Hospital, Baltimore, where he also acted as instructor in medical psychology.

N. B.—All business communications should be made to *Journal of Nervous and Mental Disease*, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

The Journal

OF

Nervous and Mental Disease

An American Journal of Neuropsychiatry, Founded in 1874

ORIGINAL ARTICLES

THE FUNCTIONAL PSYCHOSES AS AN EVOLUTION OF PSYCHIC IMPOTENCY * †

BY JOHN HOLLAND CASSITY, M.D.

ST. ELIZABETHS HOSPITAL, WASHINGTON, D. C.

In surveying large numbers of mentally disordered individuals, one encounters, not by any means infrequently, those who are imbued with the idea that they are incapable of properly effecting the act of cohabitation. Freud (1) has stated that if he were asked with what one situation the psychoanalyst is most often confronted in dealing with the neurotic he would reply, psychic impotency. E. Jones (2) makes a like observation. Similarly, in the psychotic, the psychopathologist comes upon the identical symptom-complex daily, though often in a disguised form. Freud feels also that psychic impotency, in the broad sense, accounts for civilized man's exaggerated deference toward women.

Certainly this universal masculine prostration before the female in the European civilization has a distinctly unmasculine tinge and invests the latter with a false superiority with which her ingenuity is sorely taxed to keep apace. The restraints imposed on normal sexual functioning have multiplied to such an extent that a vicious circle has developed. The child at puberty, thwarted by society's taboos, unable to fulfill his natural heterosexual desires, tends, psychically at least, to retain his attraction to earlier love objects. As a masculine product of the so-called civilized code then, the usual modern man, not dangerously predisposed by earlier influences, keeps

* Read before the Washington Society of Nerv. and Ment. Dis., Jan., 1927.

† Study limited to male cases.

mentally ordered but takes on eunuchoid characteristics in the psychic sphere. The neurotic and the psychotic, on the other hand, develop a psychic disorder by virtue of the fact that they have been overstimulated in the preadolescent stage and develop flight from reality in order to assuage the remorse over failure to perform what is probably life's most important evolutionary function and concomitantly reverts to an infantile love state via fantasy. The direction of the flow of the libido becomes misdirected. The content of the psychosis likewise becomes replete with excuses for the heterosexual incompetency.

With reference to schizophrenia, Mott (3), studying several hundred male cases of dementia precox at autopsy, concluded that virtually all these suffered gonadal atrophy. These cases studied were mostly late cases, as were the ones dissected by Lewis (4), who came to similar conclusions. The question arises as to whether these atrophic changes were natural sequelae resulting from prolonged disuse (due to institutional confinement) or if the individuals were sexually impaired prior to the development of the psychoses. If it be found that in many instances the dysfunction began before the derangement occurred, then we are faced with the perplexing problem of deciding whether the sexual impairment was founded upon the actual gonadal pathology or if it were of a psychogenic character. In dealing with this situation, we are obliged to bear in mind the inseparability of psychic and somatic manifestations. Assuming that the sexual apparatus has undergone actual pathological disintegration cannot in any way obviate the expression of the injury at the psychic level. This may be done by the victim giving utterance to his feelings of impotency, desisting from cohabitation and complaining of his inability to properly execute the act of cohabitation. Considering, however, the apparently inconsequential number of children who really fall heir to radically defective sexual anomalies, is it not probable that many sexual ineffectuals of early adulthood owe their failures principally to factors of other than somatic origin? Our answer is, that we find many cases who have shown themselves capable of reproducing but who nevertheless very early become psychically impotent. Our studies here will not necessarily be confined to this type of case but will embrace cases whose sexual inadequacy may be traced with relative clarity to malignant preadolescent influences which register predominantly in the psyche, rather than in the sexual soma.

The method by which we determine the origin and development of this phantasied sexual inadequacy and show its very intimate, if

not identical, relationship to the evolution of the mental disorder may be described purely as a correlation between the cross-section of the psychosis itself (with special reference to the content) and the longitudinal panorama of the interreaction of the individual with his environmental stimuli prior to the development of the psychosis. In other words, the development of the psychosis, in many instances, is nothing other than the development of the psychic impotency. We discover that the integration obtaining may be exposed with greater efficiency and lucidity in the psychotic individual who is normally wont to speak his thoughts without that restraint which so often obscures the mechanism in the neurotic.

The subject of sexual impotency in the male has been approached clinically from several angles, but the subjects studied have been merely neurotics, rather than psychotics. The more outstanding of these perusals have been effected by Freud (5), Stekel, and Maxim Steiner (6). The last mentioned gave due credit to both Stekel and Freud for their having demonstrated the general source of the difficulty. Freud in his collected papers duly emphasizes that many of the psychopathological entities result from the phantasied impotency, when the individual finds the adult heterosexual obligations not only uninteresting but often intolerable. This is due, he avers, to the fact that the libido becomes fixated upon the mother or sister or other preadolescent love objects and is hence not free to become attached to heterosexual ones. Alluding to the sexual instinct, he says: "When we think of the long and difficult evolution the instinct goes through, two factors to which this difficulty might be ascribed at once emerge. First, the consequence of two 'thrusts' of sexual development impelling toward choice of an object, together with the intervention of the incest barrier between the two, the ultimate object selected is never the original one, but only a surrogate for it. . . ." Steiner classifies his psychically impotent neurotics into three categories: (1) Those afflicted with inferior constitutional sets; (2) those deterred in pre-adolescent sexual development through obnoxious familial influences; (3) those developing impotency concomitantly with the onset of senility. He likewise calls attention to over-sublimation as having a certain bearing on the occurrence of the psychic impotency. Ernest Jones (7), in giving a very complete survey of the subject, mentions Freud's theory regarding the failure of the sentiments, of tenderness and sensuality, to become properly fused; to go further, he offers two additional factors which predispose to psychic impotency. These are (1) fear of punishment for sexual activities, (2) the tendency to associate the female genitals with the

organs of excretion (14). Adler expresses the opinion that "there is no organ inferiority without accompanying inferiority of the sexual apparatus." We assume that he means inferiority of the sexual soma and can consequently not subscribe in toto to this very broad assumption inasmuch as several of our psychotic cases before the onset have been extremely fertile, and upon the initial physical examination have shown marked evidence of inferiority in several organs. When he postulates the "masculine protest," he comes very close, it seems, in a rather vague way, however, to arriving at an adequate solution of the whole problem of psychic disintegration. Stekel's (8) findings have run along the same line as the discoveries of Freud, and as described in Steiner's second category of cases; to-wit, frustrations in the normal sexual development due to excess energy outflows toward love objects encountered in the different stages of metamorphoses seem to account for the inadequacy. Stärke (9) goes further in deciphering the intricate mechanisms concerned in the synthesis of this ultimate sexual incompetency. It is his theory that not infrequently, especially in cases that have been overweaned or improperly weaned, the loss of the nipple gives the infant such a marked sense of bewilderment and desertion that the vestige of this affect lingers even up to the heterosexual stage, when the adolescent persists in the obsession that he is worthless sexually. We do not imply, of course, that the infant at the weaning stage actually experiences what is known to the psychiatrist as psychic castration, but the remnants of this infantile feeling are eventually crystallized into a psychosexual impotency complex in the later stages of preadolescent sexual life.

The explanations alluded to in the last paragraph are all important and are indispensable as explanatory factors in the subject of psychic impotency. It fell to the lot of Otto Rank (10), however, to pave the road to something like a coherent and complete approach to the problem. By reading his very lucid account of the normal sexual metamorphoses, one may glean the possible pitfalls into which the individual may stumble in the course of sexual development, which imbue him ultimately with spurious notions of sexual inferiority which have no organic foundation.

According to Rank, the institution of weaning necessitates a search on the part of the infant for a substitute upon which the strongly charged oral libido may feast itself. The penis, offering great similarity to the nipple and being in suitable proximity on the child's own body, a sort of vicarious nursing process ensues in which the penis is substituted for the nipple and the hand displaces the mouth; thus masturbation. If this first step is incomplete or is

obstructed in any way, the libido will most likely remain fixed at the nursing level. Mother identification may occur, along with the castration obsession as an additional result. Normally, however, through masturbation and the accompanying appearance of self-love, the fear that the nipple deprivation meant emasculation becomes transferred into a sado-narcissistic urge to become independent and thus avenge the maternal desertion; the homosexual stage is thus attained through narcissism and the accompanying effort to find an object like one's self. This step having been accomplished, the child then beholding his father as the cause of his troubles, is unconsciously compelled "to beat him at his own game," so to speak, and thereby seek another revenge and attain, as a consequence, the heterosexual goal.

We shall outline the groups of the psychically impotent psychotics following the sequences of sexual development so lucidly delineated by Rank and according to the apparent geneses obtaining.

Group I. Those traumatized at weaning.

(a) Those who through compensatory substitution become either latent or active homosexuals as a result of the trauma.

(b) Those who remain sexually, though not necessarily intellectually, at nursing level and never pass through other stages of the same cycle described by Rank.

Group II. Individuals libidinally fixated to preadolescent love objects in a fashion latently incestuous.

Group III. Individuals sexually traumatized through inadvertent preadolescent sexual indulgences of incestuous nature.

Group IV. Those whose love energies are dissipated in avenging imagined parental desertion or neglect.

(a) As a result of death of parent of opposite sex.

(b) Due to jealousy of parent of opposite sex (Rank mechanism).

GROUP I

(a) *Case W.* The first case, a man in his late twenties, came in the hospital in a rather anxious state of mind. He related how a distinct change had come over him in the preceding three or four months. He complained that he now was unable to cope with his business affairs, whereas he had managed, and very successfully, prior to the change, an insurance concern.

The early familial situation was unique in that during his childhood the father was away from home a great deal, being a traveling man. He was the only child and slept with his mother during the absence of the father until puberty. The mother identification was in evidence very early, the boy showing feminine mannerisms for which he was taken to

task by his father. The latter told him to act like a boy. The usual father antagonism flowered into an active hatred. The patient also never had any desire to don trousers but preferred dresses. The homosexual stage of development as far as conscious overt tendencies was concerned was passed through without any especial effect on the trend of the already strongly fixated libido. This is surprising in view of that which comes later.

In graded and high school the patient associated with girls but not in the sense of participating in *affaires de coeur* but more as a participant in the usual girlish gossip. The mother attachment remained. He first indulged heterosexually at nineteen with a woman of thirty-five, who had large hips and big maternal breasts. He thought he was too small and had trouble erecting frequently. Suckling the breasts was practiced along with the intercourse and he derived the major satisfaction from the former resort.

He enlisted in the army at twenty-one in the medical corps and while administering prophylaxis to thousands of soldiers "queer desires obsessed him." At that time the actual nature of them evaded his consciousness. After being discharged he could never feel comfortable any more in the presence of men his own age. In the spring of 1925 he became suddenly aware of his almost irresistible desire to perform fellatio upon a boy friend with whom he was attending Easter service. Having insufficient nerve to approach his friend he desisted, only the next week to suggest the intimacy with another chap who was a stranger. He was successful.

Since that time (one year prior to admission to Saint Elizabeths) he has been a voracious overt homosexualist. He became possessed with such a consuming apprehension lest his friends detect his psychological infirmity that his work became slack. He began to misinterpret their innocent gestures to indicate a suspicion on their part of his being a "fairy." His only alternative he realized was flight, and having insight, into a hospital for mental diseases. This he did and the cross-section upon admission revealed depression and anxiety with partial insight into the above mentioned misinterpretations. He was eager to discuss his problems, and psychoanalysis was attempted. His dreams were of a sexual nature and the love objects were invariably elderly women with large hips and breasts. Associations time and again led to discussions of his mother. He related how unutterably thrilled he used to become when watching his mother's breasts when she was in the act of dressing and undressing.

One dream especially served to reveal the close relationship between nursing and later homosexual developments. He dreamed *he was a child again and in bed with his mother. He was in the act of massaging a large corn on the palmar surface of his mother's hand and simultaneously sucking his thumb.* The affect attending was that of exquisite pleasure.

Simple associations brought out the fact that the elevated corn suggested the nipple to him and the thumb-sucking was merely a tool of censorship in the dream. When requested to give associations on "nipple" he first came to "penis" and then spontaneously volunteered, "I believe that's why I like men." What do you mean? A. "Because it makes me think of sucking my mother's breasts." He was discharged from the hospital to Veterans Bureau authorities before his analysis was completed.

(a) *Case M.* In the next case the mechanisms are similar to those obtaining in the last case but are not so clear. The subject is a man of thirty-two who was admitted to our criminal department, having attempted to kill his wife and subsequently being declared of unsound mind by a jury.

Though his birth was normal, he was at least three years old when weaned. This data is given by patient and relatives alike. The event is outstanding in his memory. Even toward the members of his family he was bashful and ill at ease as a child. Prior to his marriage the family know of no sweethearts and state the patient always seemed to much prefer male associates. He enlisted in the National Guard in 1916 and was sent to the Mexican border until the entrance of the U. S. into the World War, when he was sent overseas. When the expeditionary forces began embarking on the transports there arose the fad of getting married, and during this period of early war frenzy, the patient, along with thousands of his mates, became infected with the wedlock disease. In France he was badly shell shocked and gassed. At the time of his return home his family noted that he was quite restless and irritable, whereas before he had been placid and calm. According to his wife, he became subject to spells of excitement, imagining that soldiers were surrounding the house and pointing guns through the windows. Homosexual panic seemed imminent at times. In his lucid intervals he was friendly toward his wife and competent sexually. There then occurred an episode in which he complained that he had too much blood and his sex organs were becoming congested and dammed up so he attempted self-castration on two occasions. Having failed, he seemed to have conceived the idea that he could ameliorate the intolerableness of the situation by ridding himself of the heterosexual obligation. He began carrying a pistol about the house. His wife, apprehending his nervousness, would hide the guns from him, often taking them out of the house. Then one day, during one of his nervous spells, she was sitting in the front yard with two of the guns in her lap. The patient immediately utilized this incident as an expedient, misinterpreted the wife's possession of the guns and opened fire on her without warning. She arose after the first shot had gone wild and the next five shots struck her in the thighs just below the waist. Now this chap was a policeman and a crack

marksman. Why should all the true shots strike in the region of the pelvis?

Now let us briefly consider the sequences in the genesis of this psychosis: Weaned at four—recollection painful even now. Seclusive and bashful throughout childhood. No interest in girls through adolescence and in early twenties. Married at outbreak of war in the early war frenzy. Homosexual environment of army apparently brought about a change of personality. After the war, attacks of excitement ensued in which patient thought soldiers were surrounding his house and that other men were regarding him as a “fairy,” more homosexual panics, two attempts at castration, and finally assault upon his wife with dangerous weapon, all shots registering just below pelvic region.

(a) *Case G.* was the first born, weaned late and the object of profuse fondling on the part of his mother long after being taken off the breast. Even after other children were born, G. continued to be the pet. The father was the overbearing type, unjust and insulting to both the mother and the patient. Childhood reaction was extraverted in character. His sex life before ten included several active pederastic indulgences with his younger brother and likewise a number of passive pederastic experiences with adult males. At eleven he attempted to cohabit with his little sister but could not erect. His first heterosexual experience was at fourteen with a woman of fifty. When eighteen another sister was born and there being an excessive amount of milk, the patient was requested to suckle the excess of milk. (This is confirmed by a younger brother.) The following year he entered into a common law pact with a woman of thirty-five, sixteen years his senior. One child was born. Being unable to interest himself further in the sexual act, he deserted this woman and joined the Marines where he resorted to pederasty, both active and passive, ad libitum. He spent about six years in the service, then roamed over the northwestern United States and Alaska, working here and there in mining camps. There is no history of heterosexual indulgence while in Marines and only very occasional heterosexual activity is reported after leaving the Marines up until the time of his second marriage at thirty-five. This time the marriage was to a woman of his own age, but was very short-lived. He was always weak sexually with her. When the situation finally became intolerable to him, he deserted her on the grounds that “she wasn’t the kind who could be a mother to him.” When G. was forty-one his mother died and at forty-three he became totally unable to execute the heterosexual act. In the latter part of his forty-fourth year he engaged in an altercation with a fellow miner in Alaska. This terminated with the latter being shot. G. was given a life sentence at McNeill’s

Island. While awaiting trial, the patient made several suicidal attempts. Shortly subsequent to the sentence he was transferred to Saint Elizabeths. This was in 1922. Since that time his reaction has been consistently one of grandiosity and narcissism. He invented perpetual motion and became Christ. He grew a beard and obtained white garments. His memory and intellectual equipment are well preserved. A very good idea of the mechanisms involved in the development of the psychosis and impotency is afforded by a drawing he did and his explanations of it. He cut a map of Florida out of the newspaper and at the bottom of the peninsula he drew a phallus, out of which poured fire into a crater situated in the Gulf of Mexico. When requested to interpret the drawing, he pointed to the phallus and remarked, "That's a rotten piece of machinery." "But fire is exuding," he was reminded. He then explained that the fire represented his seeds and he was losing them but in the process was giving the world perpetual motion. He is now the Christ and communicates with his spiritual self and is the Great Cause of all earthly events. When demonstrated before a class of medical students, he insisted upon disrobing and exhibiting his powerful muscles, and also how when he was circumcised the surgeons made a mistake and allowed his semen to escape.

His psychotic compensations are here so clearly one with the impotency feelings that one can scarcely doubt the relationship.

Now, bearing the life situations of the individuals of Group I (a) in mind, let us briefly consider the subject of sexual inversion as an acquired phenomenon. If these three cases were born invert, then our assumption that ontogenetic influences greatly altered the original patterns is unwarranted. Heretofore the sex psychologists have been divided upon the question of the origin of inversion (11). Havelock Ellis exhausts the literature on the question, mentioning that Hirschfeld, Magnan, Krafft-Ebing, and many of the older psychologists regarded sex inversion as "an episodic syndrome of a hereditary disease." In contrast to this view, the younger group, mostly Freudians, *i.e.*, Freud, Sadger, Stekel, and Jones, contend that inversion is largely an acquired phenomenon, though not exclusively so. Ellis himself seems to be of the opinion that many invert, have very strong attachments to the mother, but that the feeling is instinctive.

I can only state that among psychotics who are either latent or overt homosexualists the weight of the evidence points back very directly to improper handling of the nursing and weaning situations, usually overstimulating to the oral segments. Whether the reactions provoked are of a sexual or a nutritive nature is somewhat obscure. I personally lean to the latter. The excessive oral stimulation seems to precipitate the need of a compensatory replacement reaction and a

search is unconsciously instituted for a nipple substitute. This is attained at the homosexual stage of the sexual cycle as described by Rank. The ensuing inversion may follow one of several courses, fellatio (as a direct nipple substitute) and sodomy being the more common ones. In resorting to the latter perversion, castration fears are quelled through evasion of heterosexual love objects, and at the same time the individual avoids observation of the erect penis which would serve as a painful reminder of his own deficiencies.

Those who offer the view that inversion is purely congenital are indeed hard put to designate the specific nature of this inheritance. Hirschfield admits that the occurrence of secondary characteristics is of negligible significance as it is rare to encounter overt inversion among androgynes, etc. Neither can there be found congenital defects in the glands of internal secretion though many of the old school still cling to this shred. Ellis very aptly alludes, however, to the repeated occurrence of inversion in same families, which brings us to our main part. True, certain reaction patterns are inherited and some of these patterns may be more susceptible to inverse reactions *provided the environmental stimuli are such as to provoke these reactions*. In the absence of these stimuli the inversion is not likely to occur. On the other hand, if an individual inherits reaction patterns which are predisposed, only to a negligible degree, to inverse-provoking stimuli, if the stimuli are sufficient in quantity and intensity (as in overweaning, preadolescent trauma to sex organs, etc.), inversion will not infrequently develop from the excessive stimulation. In other words, minimum predisposition does not preclude the occurrence of inversion if the individual's reaction is extensively conditioned by certain ontogenetic influences. The whole question has been quite muddled, due to the failure of the various psychologists to include the latent type of homosexuality in their studies. They likewise have ignored the fact that the organism, including psyche and soma, reacts as an energy unit, in spite of the insistence of White (12) and others upon this point. And I wish to emphasize that though stressing the psychological phase of the question, I have no doubt that thorough pathological studies at autopsy would reveal corresponding somatic reactions.

GROUP I (*Continued*)

(b) The cases in the second division of this category show evidences of failure to mature sexually beyond the nursing level. This may be somewhat confusing inasmuch as allusion to the nursing level usually carries an implication of profound deterioration, which is not true of either of the foregoing cases. These two patients developed

intellectually but, due to excessive flows of the love energy at the nursing stage became unable to divert the flow of the libido into progressive pathways. In the language of Kempf the oral segments became so strongly charged with affective energy as to prevent its proper dissemination to the other segments. Hence heterosexual insufficiency and the expenditure of a great amount of verbal energy in lieu of homosexual practices.

In contradistinction to the cases in the (a) division of this category, those included in the (b) division experience a dearth of cravings at every point in the sexual cycle.

(b) *Case N.* The first case was the eldest child, weaned very late—at four—and, as do many others of the maladjusted, he recalls the process quite well, that some very sour liquid was applied to the nipple to facilitate the weaning. His nativity was Italy. The parents were both kindly disposed toward all the children. No history of jealousies or of family strife elicited. He attended a Catholic school and finally completed in Rome, Italy, what seems to be the equivalent of a two-year college course here in America. His childhood and adolescent sexual experience was notable by virtue of absolute refraint from any sort of indulgence. He remained devoted to his mother. When fourteen, and incidentally during his school course leading to a priesthood, one of the superior officers of the Catholic school counseled him to sexual renunciation. He then earnestly vowed his sexual abstinence and insists he has never been recreant to the vow. He has had no sexual experience, not even resorting to masturbation.

He came to the United States when about twenty-one and has occupied himself at various laboring pursuits. During the past few years he has displayed a keen interest in metallurgy and for years roamed about the country in search of gold. A few years prior to his admission he developed delusions of persecution and projected them on the K. K. K. and Masons.

He now wanders about the grounds gathering stones, which he prizes very highly and guards very jealously as he believes them to contain gold. When the subject of women is broached, he grows very vituperative and disdainful and heatedly relates how various women try to tempt him. He continually interprets certain unwitting actions or gestures of nurses as invitations for cohabitation. He alludes to all women as either "bitches" or "whores." If he sees one of the physicians doffing his hat to a lady he will often denounce him. It is still with abhorrence that he regards all sexual practices and especially ruinous is cohabitation.

(b) *Case M.* is at present thirty-seven years of age. He was the eldest of twelve children and aided his mother in rearing the eleven younger ones. He was the mother's favorite, and she often interceded in his behalf when his father was severe, the latter being alcoholic and often

morose and brutal. Finally, when the patient was in his early teens, the mother refused to live with the father any longer. M. then naturally fell into his father's shoes, so to speak, and for a number of years helped in the support of the children. When about twenty he left home and roamed for several years, and at twenty-three or twenty-four he married a woman twenty-five years his senior, on the grounds that she "was settled and would not be as expensive as a young one." He could not adjust with this woman very long, however, and soon developed the idea that she was unfaithful although he can supply no suitable evidence to substantiate his suspicion. He began to consider sexual intercourse as harmful to himself and, as he expresses it, he thought it best to "wean" himself away from her.

At twenty-eight he was drafted into the army and sent to France. In spite of the fact that most of the companions of his race took advantage of the opportunity to indulge with French girls, the patient desisted, rationalizing his refraint by saying that he had an ingrained respect for white girls from his training in the South. This apparently offered no obstacle to his companions, needless to say. After the war he abstained sexually because of the fact that he thought sexual indulgence would affect his mind. It was then that he became alcoholic and developed grandiose ideas such as believing that he was "one among thousands."

In 1924 he was hospitalized at an army hospital on account of fallen arches. While there he became subject to periods of momentary confusion, during which he felt that he was losing control of his thoughts, and in these hazy intervals he was at times disturbed.

Upon admission to this hospital he was agreeable and jocular and admitted having these spells in which he was emotionally unstable, but he stated that he had no control over their occurrence. In discussing his past life, he related his unfortunate family history, his strong affection for his mother and his repeated difficulties in erection with the very few women he contacted. These women were always of the maternal type and many years his senior. He had vague notions of being abused at times and could not stand much criticism.

The unfortunate family dilemmas, the prolonged nursing, his father's brutality, and early separation from the home, accentuated the patient's love for his mother, he imagining himself in the rôle of protector and, after the father's departure, of the man of the house. Again we observe such misappropriation of the libido as to prevent its flow in heterosexual channels.

GROUP II

The data obtained in the cases of Group II reveal definite pre-adolescent libido fixation of an incestuous nature to familial love objects. Inability to fill the heterosexual rôle provoked a flight into fancy wherein responsibility for impotency is fixed in significant ways upon various associates through the mechanism of projection.

Case S. A male patient in his middle thirties is admitted to the ward. He is sullen and pouty and complains that his brother-in-law has put poison in his food; that crowds follow him jeering and hooting, and crying that he is the father of his sister's child. An interview with his sister, brother and father revealed that the patient had since seven or eight loved his younger sister most devotedly and had always displayed marked preference for her. In fact, other girls even after adolescence never seemed to draw even a modicum of attention from him. It could never be learned if incest was actually practiced with his sister or not. At the age of eight the patient became subject to epileptoid seizures which at first occurred on an average of once a month, increasing to twice a month following his mother's demise when he was thirteen. In January, 1924, the sister to whom he was so obviously attached married. During the spring of 1924 the patient became alcoholic and his seizures multiplied from an average of one a month to fifteen or twenty. He lost his job and grew careless, sullen and irritable. In March, 1926, at the birth of his sister's child, the patient accused an aunt of saying he was the child's father. He also asserted that the sister was responsible for his being discharged from his work. He claimed further that his brother-in-law put dope in his pipe, a substance purporting to destroy his vitality. The patient's version corresponded essentially with this account and, in addition, he averred that he "could never work like other fellows." When asked if he meant occupationally, he replied, "in every way." In what other respect? Ans.: "I never could do anything with girls." How do you know? "I just couldn't." Nothing further along this line was obtained except that the other fellows always regarded him as "a clown" when it came to women.

Here we have an adult individual who never made the slightest gesture toward fulfilling the biological sexual obligations usually fulfilled by the adult. Fixation of the libido upon an incestuous love object is ostensibly responsible for his obsession that he was no good with women. Deprivation of this love object through her marriage created a situation that was intolerable and from which he apparently sought surcease in the development of a psychosis. In his new rôle he became the falsely accused of an unthinkable offense in lieu of an actual sexual reprobate.

Now the usual question will no doubt be propounded by the anti-Freudian critic, "Do you imply that this patient actually had sexual feelings as a boy of five or six?" The answer is that nothing is implied except that the patient's relative thought him to be quite charmed by his sister and that in his autistic production he became the father of his sister's child, much to his own chagrin, which in turn seems a reflection of society's intolerance of this type of wish

of which he was never consciously aware. We may add that it is not unlikely that the sister served as the mother surrogate inasmuch as his mother (deceased twelve years) appeared to him in his waking phantasies.

Case A. The next case is even more specifically illustrative of the method by which psychic impotency develops and also of the way the individual utilizes the psychosis as a means of escaping the intolerable feeling of degradation through rationalization and projection.

This patient was twenty at the time of admission. The father died of a protracted chronic illness and developed what was characterized as a "nervous breakdown" just prior to his demise. A sister was said to have died from "grief" over the death of a brother (depression?). The mother was a religious fanatic and certain of the divine revelations smack suggestively of hallucinations.

The patient was the first born. Weaning was effected at the proper time and the essential habits were acquired without untoward interventions. The life of the child before ten was relatively uneventful except for the fact that the patient, according to the mother, was always a "mother's boy." In fact, she states that she always looked upon her boy and girl as two girls. She likewise overstimulated him with excessive caressing. At school he was precocious and in the afternoons after school it was his preference to return home rather than play. The father died at a critical period in the patient's development, when he was thirteen. The latter was obliged to work after school hours. The occurrence of this event also tended to bind the patient even more fast to the home and to his "mother's apron strings," so to speak. Though thrust into the external rôle of the father, he was intrinsically identified with the mother. He consequently avoided girls, and both the mother and the sister state that he never had any affair with a girl. The three often slept in the same bed during storms, etc., but nothing of a consciously sexual nature transpired.

An adjustment to society might have been possible had not the results of the strong mother attachment manifested themselves so noticeably in the son's personality. But at school the other students had no difficulty in realizing that the patient was different from them and that he was a "mother's boy." They avoided him and called him "sissy" and jeered at his being "tied to his mother's apron strings." These unfortunate happenings created the necessity for rationalization and the actual sneers became magnified and distorted into misinterpretative phenomena. When he was nineteen a baby brother was drowned. The patient utilized this incident to rationalize his unpopularity at school. It became clear to him that the reason the other fellows had avoided him was that they suspected that he had plotted to kill his little brother. They said, "More bread and more butter." This conveyed the idea to the patient that they

meant he had perpetrated the crime that he might have more bread and butter himself and would thus be enabled to curtail his own labors. This could not entirely assuage his inward realization, however, that he was not a man in the accepted sense and so completely had the libido been misdirected that it is not at all certain that he wanted to fill the rôle of the adult male. With his love energies fixated so that heterosexuality was a remote possibility, he became imbued with the notion that his mother was putting poison in his milk. What was this poison? At first he said "something to fix up his nerves." Then he complained it was put there for the purpose of making his voice hoarse. What sort of stuff is this poison? he was asked. "Probably iodine," he replied, "to make me strong." Strong where? "Down here," he indicated, pointing to his genitals. Can iodine make you strong there? "It may have iodine in it." But what actually is this poison? "That stuff that comes from down there," he finally averred. His mother proposed, therefore, to make a man of him and he, being comfortable in the rôle of the castrate, repudiated the attempt as a belligerent act.

This case, like the first, seems to be one of misinterpretation of the love energies. The excessive stimulations of auto-erotic period established strong ties of affect toward the mother at the expense of the latter stages of the sexual life cycle. Hence a persistent masochism and heterosexual evasion.

GROUP III

The following two cases fall under Group III, *i.e.*, that in which the individuals included became psychically impotent, apparently as a result of premature sex relations with parents or parent surrogates initiated by the latter, and which engender severe psychic trauma.

Case P. was thirty-two when admitted to the hospital and had been committed for observation after having made a pedophilic assault on a girl who was ostensibly in her early twenties. In the observation ward he viciously bit the scrotum of a fourteen-year-old fellow patient and later attempted suicide.

The father died during the patient's early childhood and the latter subsequently slept with the mother until he was twelve. At ten or eleven he alleges that she often urged him to perform various perversions with her—cunnilingus, passive fellatio, passive coprophagia, etc. Though the patient told a pretty straight story about other earlier experiences and appeared to have lost his delusions, this, of course, sounded quite improbable. The mother was told she could feel free to talk about the affairs one was usually ashamed to discuss and she admitted one time she had caught her son attempting to cohabit with her. Then spontaneously and unwittingly she related how common it was for various

mothers she had known to abuse their children by cunnilingus, mutual masturbation, etc. She also averred without questioning that she wouldn't be surprised if her sister had played with her son. Incidentally the patient had mentioned that he had practiced similar perversions with his maternal aunt.

The reader may draw his own conclusions regarding the validity and reliability of this data. The mother is a colored woman, obviously defective.

At any rate, the patient said he had never been able to perform coitus and, in fact, never desired it with other women but was a confirmed masturbator and further, when he did masturbate, he always fixed his mind upon the numerous experiences with his mother, which continued up until he was twenty-two or twenty-three, when the mother remarried. Shortly subsequent to this event he assaulted a girl and attempted to massage her privates. He describes this event in almost the identical terms he employs in relating the details of the procedure he effected with his mother. Upon a second assault of this character he was sent to St. Elizabeths. When his mother visited him he immediately attempted to violate her and would have succeeded except for alert attendants. He did manage to secure a piece of her lingerie, which he guarded very jealously. He later would masturbate for hours, simultaneously kissing the torn garment. It is now very taxing on the attendants to prevent his auto-erotic performances during her visits to see him.

Though this may seem a very crude presentation, it at least illuminates a most important mechanism which contributes importantly to the theory set forth in this treatment, to wit: that the mental imbalance is often nothing but the evolution of a psychosexual incompetency, having its roots in obnoxious preadolescent influences—frustrating the proper sexual synthesis.

Case Mc. The next example is of a man who was admitted in 1913 at the age of thirty-seven. Apparently he had been psychotic for years before that. He admitted that his dead sister had appeared to him in 1907, telling him that she was to be his wife.

His birth was normal as far as could be determined and the weaning did not seem to have left any painful impressions. At five or six an aunt used to manipulate his sex organs and make efforts to introduce his penis into the vagina against his wishes. At twelve he had one or two incestuous experiences with a sister six years his senior. He loved her very dearly. She succumbed to T.B. at nineteen. The patient never cared for any other girl, though he did marry at twenty. The sex relations were highly unsatisfactory to his wife, the patient often failing to erect and when he succeeded he was frequently premature in the ejaculation. He also states he was much too small for her. Finally the affair

became totally unbearable to the wife and after three years of marriage she deserted him. The patient was then twenty-three. Though stable occupationally up to this time, after his incompetency became so unmistakable to him, the compensatory process began to manifest itself. Whereas before he had been only a laborer, he now began to wander about the country in search of knowledge, finally teaching at one time, but usually shifting from one job to another. During these years he abstained sexually.

At thirty his dead sister appeared to him and apprised him that they were to marry. Her voice told him she had been in the body of the woman he had married and that her spirit had been the cause of the separation.

The picture since admission has remained one of grandiosity and flamboyancy though his intellectual basis failed to undergo any special disintegrative process. His compensations have now become more specifically psychic efforts to make good his imagined impotency. For example, he avers that he is compelled to visually hallucinate sucking raw eggs. "Eggs," he says, "contain the sperm of the rooster." This is done to in some way restore his nature which was so deplorably damaged by his aunt when he was a child.

Though physically robust, his genitalia remain adolescent in size.

His ward behavior has been exemplary except for his occasional practice of anointing his head with urine. He confuses the urethral secretion with the seminal fluid and thus purports to regain his "nature" by osmosis, as it were.

GROUP IV

This brings us to Group IV, or to those individuals who seem to have misdirected their love energies in an attempt to avenge an imagined parental desertion or neglect.

In the first of the two cases in (a) premature death of parents ostensibly left the indelible print and unforgettable sting and stimulated reactions which consumed the bulk of the patient's love energies. He was admitted at the age of twenty-eight from Leavenworth Prison, where he was serving a sentence of one year for violation of the Harrison Narcotic Act.

The birth, weaning and acquisition of the essential habits were uneventful. The father died of T.B. when patient was seven; the mother of the same disease when the patient was nine. He recalls the latter event quite vividly and likewise his mingled feelings of anguish and desolation as he gazed upon his mother's corpse. "I have often since pictured that night," he states. After his mother's death, he was taken by friendly neighbors to be cared for and was enabled to complete the fifth grade in school. Though the foster parents were kindly disposed

toward him, the patient felt sorry for himself in his plight and grew restless. He decided to go away at the age of twelve. He then roamed about for the next six years, always restless and discontented and for no reasons of which he was conscious. His occupational life was marred by his lack of interest and resulting discharges. His sex life was virtually nil except for occasional visits to houses of prostitution. There was never any actual feeling of affection toward any girl. He masturbated moderately throughout adolescence. At eighteen, still possessed with discontent and unexplainable sadness, he resorted to drugs, in which he indulged excessively until his arrest at twenty-eight. Though his brother states he is of the opinion that the patient has been psychotic for a number of years, the first official reports of psychotic behavior came from the Leavenworth Prison. The certificate stated that shortly after his commitment there, the patient grew very depressed and attempted to hang himself. The patient admits several gestures of this sort in the past four years. At prison, as well as here, he was goaded into trying suicide as visions of himself having intercourse with his mother's corpse continually passed before his eyes. This simply maddened him. Here he has made at least thirty attempts to strangle himself and repeatedly and pleadingly begs to be left alone so that he may gain surcease from his torments. My guess is that his unconscious sadistic reaction against the premature parental deprivation has been turned on himself as in suicide he sees, though not consciously, a solution to his problem. His compelling reaction merely follows the naturally regressive trends taken earlier by the libido, from which he has unsuccessfully undertaken to diverge. Shame from realization of the incestuous feelings serves to expedite the desired process—return to the mother via the suicide route.

(a) *Case W.* presents another angle of imagined parental desertion. The weaning was terminated very abruptly when he was two by the death of his mother. The maternal grandparents cared for him until he was six. At that time he was returned to the father, who ad interim had remarried. The patient was a very bashful child and never had many companions. The father's stepchildren jeered and taunted him. The patient and his father were always at odds. The latter was arbitrary and often denounced *W.* for trivialities and all out of proportion to the degree of the offense. He also seemed to begrudge the patient any pleasures. The father seemed to note that the patient was not as self-assertive as other children his age and instead of encouraging the patient, he chided him and often told him he wasn't "worth his salt." He met no better treatment at the hands of his fellow students, who repeatedly scored his prudishness and timidity.

The situation proving intolerable, the patient ran off from home after completing grammar school and attempted to enlist in the army but

was rejected on account of his age. Upon his forced return the father was quite vituperative. W. returned to school and completed the high school during the next four years.

Between his eighteenth and twentieth years he succumbed to two severe attacks of pneumonia. At twenty he made an attempt at occupational adjustment but found himself too weak to adapt himself.

At twenty-one he enlisted in the Marines, where he was the butt of many taunts as he would not join the crowd in its debaucheries. He considered drinking and sex practice sinful. Frequently his mates would hurl him into a ring and make him fight.

Sexually, the patient was never interested in girls in the remotest degree. During adolescence he masturbated moderately. Always ill at ease in the presence of women.

After six months of humiliation in the Marines he became depressed and felt that "the weight of the whole world was hanging about his heart," and that "the salvation of everyone depended upon him." "Something departed from my body," he stated and added that that something was the holy spirit. This was the result of his not living up to his principles, he averred, though he could recall no actual sins.

He dreamed repeatedly of seeing his mother in her grave and he felt impelled to jump in with her. Associations referred back to the feelings of loss over not having a mother. The shock of the abrupt yearning seemed to imbue him with a stranded feeling. This assumption is rather borne out by the manner in which he rather helplessly floundered through childhood and adolescence, groping blindly for a love object which he could find only in dream life.

Case L. is a man of twenty-nine who was found guilty of raping a little girl of eight, the carnal act being preceded by a most brutal assault and followed by a ferocious attempt to have the little girl perform fellatio upon him.

L.'s weaning was prolonged and effected with great difficulty. L., however, in school was said to be quite masculine in his play and performance. At eight he lost both of his parents and was cared for by a maternal cousin and his wife, who accepted the responsibility with great reluctance and bad grace. The overbearing attitude of the parental surrogates was indeed an unfortunate affair at this critical point in the child's development. Having barely reconciled himself to the loss of the breast and the disappointment accompanying the loss, the advent of the sudden injustice imposed by the foster parents provoked in him exaggerated retaliative tendencies. The only form of retaliation he had known, of course, was that psychologically registered in protest against the trauma sustained at weaning and against the closely associated idea of castration. It was this character of hate apparently that he called to his rescue in this untimely, and indeed fortuitous dilemma, thereby halting the normal psychosexual development at a very crucial time, that

is to say, when the patient was bridging the narcissic gap between oral sadism and heterosexuality. Rank avers that this step is a most essential one and is dependent upon a transition through the masturbation, homosexuality, narcissistic route. He describes the integrations concerned with great care and emphasizes that part of the sexual evolution wherein the penis is substituted for the nipple and the hand for the mouth, thus completing the first step in the direction of adult sexuality. Sullivan renders a very vivid description of the process in normal children, from the clinical angle, in his discussion of erogenous maturation.

In view of the non-transference features of this case, we are obliged to utilize the material collected when the patient was off his guard, and to refer to letters which were intended by him to be *sub rosa*. We submit below the testimony of two prison attendants based on six months' association with the patient, and excerpts of the supposedly *sub rosa* letters.

"L. often bragged about his past amours and the various kinds of perversions he practiced with women. He likewise bragged constantly of his physical strength and manly vigor, which seemed to be his fixed idea. He masturbated almost every night and bragged about his endurance. He often deliberately and publicly exposed his genitalia and body generally. He told us with great pride of all the sexual connections he had had with small girls before he came to prison."

Another prison hospital nurse testified that L. talked all the time about the various kinds of girls he had known and what he did to them in various sexual ways. If L. saw a pretty female picture in a paper or magazine, he would say he would love to—(perform cunnilingus upon her). He drank enormous amounts of milk topped off with eggs and anything he could sneak from the patients' dietary. Stated this would make him big and mighty and able to "flip off good" when he got out of jail. He exposed his body continuously. Said Haitian girls were "rutting" at eight, thereby vindicating his antisocial behavior in Haiti.

In a letter that was supposed to have been secretly mailed to a widow with several children (and incidentally several years his senior) he confided (using vulgar expressions): that he cohabited with at least fifty little girls before he was eighteen. And further on in the same letter he tells her:

"I could not be satisfied with a mere good-night kiss from you. I can go all night long, seven nights every week." Then strangely enough, he adds, that if he cannot give it in the old-fashioned way, he would be glad to substitute the mouth parts and would be just as glad to satisfy her in that way. . . ." Then still further on he implores her to wear a "bodice that comes up just high enough to imprison his precious little sweet twins for his favorite pastime would be to take them in his hands and fondle and kiss them, at every opportunity."

Now note the melodramatic tone it assumes in admonishing her about going with another man:

"It tore my heart all to pieces and the whole big frame of my great strong body just trembled with convulsions and horrid, hoarse, rasping sounds. If I could have gotten my hands on that damned rascal that night, I would have made mincemeat out of him, bones and all. You should not have gone out with him or any other damned knave. I am afraid had I been there I would have broken and crushed your precious heart until you would never have been your sweet 'self again.'"

Then thence, with this second mother surrogate, he virtually admits his psychic impotence when he assured her that even though he could not effect cohabitation in the old-fashioned way he could resort to a perversion, oral erotic in character, which would be just as suitable to him and, to his notion, just as effective. His favorite pastime, however, would be fondling his "pair of little twins" (the mamma), which act would ostensibly afford him a certain recompense for the original breast-withdrawal; and through narcissistic bragadoccio, masturbation, sadistically-tinged compensatory threats, etc., he asserts his independence, and synchronously wreaks his revenge for the original trauma. The psychological combination becomes more adequately crystallized in the act of pedophilia. Oral cravings are gratified through cunnilinguis, and nursing simulations. Old scores are vindicated through the assumption of brutal attitudes, castration obsessions are rationalized through pedophilia sufficiently to at least partially still his own alarm over being impotent.

The predominant tone of this man's reaction is one of sadistic retaliation and it is clear that it is at this level that most of his energy is dissipated, and at the expense of his heterosexual capabilities. The suspicion of desertion was reinforced by the stepchild treatment received at the hands of his foster parents. Hence the ensuing vehemence expended at preadolescent levels, rendering him unfit for adult sexual indulgence.

(b) The revenge displayed in *Case D.* was obviously precipitated by actual parental neglect and by the mother's noticeable partiality shown an older brother of D. Very near the same age, the two were rather natural rivals for parental approbation. It is also quite clear that the latter possessed superior qualities to D. Though the nursing period was uneventful, D.'s earliest recollections are of his mother's decided preference for the elder brother, to whose wishes the mother always acceded and often at the expense of D.'s feelings. The father was a colorless ineffectual type and the mother dictated the policies of the household. The elder son was very clearly the principal object of his affection. In school D. was mediocre and considered dull while the brother excelled and was brilliant, eventually graduating from Harvard while D. only completed grammar school. All this served to rankle the patient's mind and to make him so despondent that on one occasion, when

twelve, he attempted suicide. To heap coals on already smouldering flames, his brother was domineering and bullying toward D. The father's energies became dedicated to the proposition of emulating his brother and gaining the parental recognition he so hungrily coveted.

His sexual life before puberty was characterized by occasional auto-erotic practices. Throughout adolescence he was abstinent heterosexually and was shy and ill at ease in the presence of girls his own age. When twenty, he was sent overseas with the A. E. F. and in 1918 had a "nervous breakdown," the nature of which is obscure. He recovered after a fashion and returned to the United States. Taking advantage of the Veterans' Bureau vocational training, he completed a three years' course in chiropractic at Davenport, Iowa. To his way of thinking, he would now receive equal approbation with his brother but the mother's attitude toward him remained lukewarm and condescending. At any rate, the patient entered active practice at Havre de Grace, Maryland. There, at the age of twenty-seven, he first indulged in sexual intercourse. Shortly subsequent to this experience he became quite disturbed and excited and borrowed money from his father, which he immediately spent on foolish things. Upon visiting the Veterans' Bureau on some obviously unnecessary excuse, he was refused admission, whereupon he struck the guard and engaged in an altercation with three other officers. He was immediately sent to the hospital. Here he was excited and assaultive, showed increased psychomotor activity and flight of ideas. He said he was "split" when a baby and "grew up the wrong way." Stated he had just begun to grow up. A few weeks after admission he got hold of some bichloride and attempted suicide. A month or two later he quieted down and improved so rapidly that he was given parole. After a short time he eloped. Returned voluntarily. He was again accorded the privileges of the ground and again he violated them. He adjusted at home very poorly and made weak gestures toward occupying himself. He acquired the new delusion that his genitals were infected and that the trouble could be alleviated by drinking mustard and took Vinol to restore his depleted vitality. Upon seeing a lady across the street drop a kerchief out of the window he became obsessed with the idea that she was flirting with him and he wrote her obscene letters. When he listened to the radio the voices he heard threatened to castrate him. Then one day he came home from the library, and finding his mother at home he assaulted and succeeded in raping her, according to the father. A negro man, hearing the shrieks of the mother, hastened to her assistance only to be ejected by the patient, who tore a screen door off the hinges in the process. At the hospital he was quieter, talked freely, admitted the incestuous attack without any noticeable emotional reaction. A bit later he became violent, assaulting patients, attendants and even his father.

There is a great deal more of interest in this case but the above suffices for purposes of illustrating the impotency phenomena as a probable background for the maladjustment. The important fact is that the assault on his mother was not motivated so much by his actual sexual desire for her as his sadistic impulse to repay old scores which contributed extensively, so it seems, to his psychic impotency. His first heterosexual experience was a great shock to him and he very soon afterwards gave utterance to overcompensatory assertions, then finally to castration fears.

(b) The contributing factors presented in *Case K.* of such character as to facilitate a more lucid correlation between the weaning trauma, with its associated factor of psychic enucleation and the resulting pedophilic propensities. Shortly subsequent to his sudden and premature breast-withdrawal, that is to say when the patient was four years of age, the mother unwittingly augmented the disconcerting weaning sequellae (that is to say, castration phenomena, vindictive reaction and oral cravings) by displaying great affection toward a little girl in the neighborhood (K.'s own age). K. recalls his bitter jealousy toward this rival and likewise the morbid antipathy he developed toward all little girls near this age. It may be well also to mention at this juncture that K. was some six months delayed in acquiring the habit of walking. In the preadolescent stage he was most noticeably bashful toward girls. Just prior to and during puberty he indulged excessively in competitive autoerotic practices with a boy friend. While employed as a delivery boy for a grocery, when about sixteen, K. resorted to his first pedophilic indulgence with a little girl of six, whom he found at home alone one morning. Thereafter he indulged quite frequently with little daughters of customers encountered on his route. He would insert his organ just between the lips of the vulva and effect an act which he describes as "really nothing but masturbation." He justified his choice of younger girls by averring that those his own age were all just "gold-diggers." He was first arrested in 1914, having accosted a female child on the street and persuaded her to accompany him in an auto. The police authorities, after a rather thorough investigation, recommended his hospitalization in a state institution. After a short stay there he was discharged as cured from mental deficiency, which diagnosis would be absolutely the last to be offered by anyone who is at all informed in psychopathology. A year later he married a girl whom he described as frigid. A child was born nevertheless, in spite of frequent erection difficulties. The marital sexual relations were never satisfactory, K. maintaining that his wife was unresponsive. He separated and remarried in 1918. He required his second wife to keep the pudendum free from hair, being unable to erect properly if there was any present. It was

his pleasure to lie next to her and merely go through the motions, so to speak, of the act of intercourse and to concomitantly suckle the breasts with great avidity. When twenty-two, he was again apprehended by the police in the very act of ravishing a female child of nine and he was sentenced to a year's imprisonment. During all this time he never desisted from masturbation, and for the past two years he feared that the excessive indulgence would effect his mentality. The arrest which led to his commitment here resulted from his having lured a girl of eight away from a tourists' camp. She was found deserted two or three miles from the camp several hours later in K.'s car which had broken down. She confided to her mother in her child parlance that a man performed cunnilingus upon her. Upon admission to this hospital K. was very loquacious and manic in his reaction through not greatly excited. The oral musculature was given great play and his tongue protruded continuously and suggestively in conversing. He minimized and evaded not a little before ever admitting his guilt in any of the cases. He continued his autoerotic practices. Physical examination revealed a female arrangement of the pubic hair and adolescent genitalia.

To briefly condense, K.'s behavior, his reluctance in developing the walking habit, probably reflected his desire to remain a nursling. The appearance of the rival on the scene motivated him to direct the oral sadistic affect toward her who had seemingly obstructed the return pathway to the cherished object of his oral cravings. In later resorting to the sexual act of pedophilia, he averges himself on the displaced wrath object (the little girl who had frustrated his desires) and simultaneously discovers in her a subsequent love object made to order, so to speak, for his psychic impotency, determined at the weaning and persisting into adulthood. His morbid antithesis to pubic hair strongly suggests a fear of being unable to perform the adult physiological act (relating, of course, to the sense of loss experienced at nursing separation). The performance of the suckling with his wife requires no further comment.

The significant message to be gleaned in this communication is that unfortunate environmental factors, whether they be micro-organisms, ill treatment by parents, sexual traumas, nursing excesses, or what not, often seriously interfere with the normal psychosexual development; and it is then that the individual is obliged to shift his position and change his psychic attitude toward life in order to reconcile his actual or imagined sexual inadequacies to sociological and biological requirements. Further it is in this shift and transformation that he assumes a different perspective from the average individual and hence becomes a neurotic or a psychotic. The cases described above are only a few in which the process is rather obvious. We get hints, however, that similar mechanisms obtain in innumera-

ble psychopathological cases, irrespective of type. The melancholias, for example, in which the victims sense a waning sexual power, afford another rather frank illustration of the nature of psychotic developments. These people are in anguish, feel that they are ruined and no good, and occasionally admit that the cause of their agitation is fear of loss of manhood. This reaction is a psychological response to an essentially somatic situation, as is the paranoid projection in the senile. Can we ignore this element as a component of the total reaction in paresis? Certainly compensations of this disease are invested, at least to a degree, with ideas of sexual weakness.

We would recapitulate that in younger individuals impotency notions are as a rule stimulated predominantly by psychic factors rather than by actual gonadal disintegration, congenital or acquired. That this is a direct challenge to elementalist doctrines, still fostered by the older psychologists, is not to be denied (13). White seems to put elementalism in its proper place in time when he says: "Germ plasm determiners in the sense of Weisman, *i.e.*, in the elementalistic sense, are quite as mythological as the ideas of the associationists and in so far as they can be said to exist at all, *i.e.*, in the organismal sense, they are 'initiators rather than determiners.'" Then later, in quoting Ritter, he adds, still on the subject of elementalism: "As applied to man, this form of fatalism is no less sure and no less dire in its tendencies than have been any of the innumerable theistic forms of fatalism that have prevailed through the centuries."

The theory that psychic impotency affords a basis for the formation of psychotic reactions is not intended to be all-embracing. It is merely a suspicion, based on clinical evidence, that impotency, actual or imagined, has a great deal more to do with psychotic developments than has been heretofore believed.

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THE RELATION OF OCCUPATION TO MIGRAINE

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Among the ideas that have been handed down to us about migraine is the inclination to look upon it as one of the penalties of civilization and to consider it more prevalent in the upper classes, or among brain workers, than in the poorer classes, or those who labor with their hands.

Riley (1) states that, "some one has said that it is a disease of the more cultured classes. On the whole this is true and there are more intellectual persons afflicted with it than day laborers."

Edinger (2) says, "migraine is most frequently found among professional people, especially among the brain workers and we possess excellent descriptions by prominent authorities who have themselves suffered from the disease."

Crookshank (3) says, "in a word, never quite commonplace, or ordinary, in their own spheres of life, the migrainous are people who, in Jung's phraseology, are to be regarded as introverts, and, moreover, usually as thinking introverts."

However, Auerbach (4) says, "position and occupation probably exert little influence; it certainly is not true that the so-called upper classes are notably more affected by the disorder."

Here are two directly opposite views with no evidence to support either side. This idea that migraine is more prevalent in those whose brains are most highly trained and whose occupation is mental rather than physical, would be exceedingly hard to reconcile with the observed facts as to sex incidence and heredity in this malady.

To throw light on this question, it would be necessary either to determine the prevalence of migraine in a series of persons of various occupations, or to determine the occupations of a series of migraine sufferers, as compared with the occupations of nonmigrainous persons. Adopting the latter method, the occupations of 400 migrainous patients have been tabulated as compared with the occupations of 1,000 nonmigrainous patients. Because of the uneven sex ratio, men and women have been tabulated separately. Half the migraine sufferers were housewives; and trained nurses, missionaries and social workers have been classified separately; the other three classes cor-

respond in the two sexes, although naturally the number of laborers among women is small.

TABLE
OCCUPATIONS

	1000 consecutive patients	% of whole number	% of women	400 migraineous patients	% of whole	% of women
Women						
Housewives	360	36.0	66	191	48.0	67.7
Social workers	42	4.2	8	18	4.5	6.3
Manual laborers . . .	16	1.6	3	3	.75	1.1
Business	51	5.1	9	37	9.0	13.2
Professional	76	7.6	14	33	8.25	11.7
Men			% of men			% of men
Laborers	132	13.2	30	29	7.25	24.6
Business	233	23.3	50	59	14.75	50.0
Professional	90	9.0	20	30	7.5	25.4

As shown by the table, there is nothing in the writer's experience to indicate that occupation has any influence on the incidence of migraine.

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METASTATIC CARCINOMA OF THE CENTRAL NERVOUS SYSTEM

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(Continued from page 14)

Case X. Summary: Primary cancer of the prostate with metastases to both lungs, ribs, vertebrae, pelvis, femur, base of skull, sella, with additional lesions in the pituitary gland and into the right Gasserian ganglion.

S. B., a seventy-two year old ironworker, was admitted to the Philadelphia General Hospital December 5, 1924, service of Dr. Carnett, and died January 12, 1925. The history states that he had nocturia for the past year. In August, 1924, he complained of severe and intermittent pains in his head and face, radiating at times to the upper and lower limbs. Examination upon admission revealed a horizontal nystagmus. The pupils were slightly unequal but they reacted promptly. The eye grounds were normal. The fields were not taken. There was some clouding of both lenses. His vessels were everywhere thickened. Examination of the prostate revealed a large mass, especially of the left lobe. Metastases into both lungs, thoracic spine, pelvic bones and femur were revealed by Roentgenograms. The blood Wassermann was negative. The blood chemistry was normal. The urine showed a trace of albumin and many hyaline casts. On January 11, 1925, he developed a generalized convulsion, continued in coma and died the following day.

Necropsy showed a primary adenocarcinoma of the prostate with local extension to the bladder, and widespread metastases to ribs, sternum, lungs, pleura, lymph nodes, skull and femur. On removal of the brain a small tumor mass two cm. in diameter was seen to project from the sella turcica into the pituitary. The right Gasserian ganglion was likewise embedded in a tumor mass. Microscopically, islands of carcinoma cells were found in and around the Gasserian ganglion and the roots of the fifth nerve. [Fig. 6.] In the pituitary islands of cancer cells were also found, particularly in the posterior lobe, and a large mass of cancer tissue surrounded the pituitary body on all sides, especially posteriorly.

Case XI. Summary: Primary carcinoma of the prostate with a metastatic subdural mass in the lower dorsal and the upper lumbar regions, which produced pressure upon the cord.

S. K., a white man of sixty-seven years, was admitted to the Philadelphia General Hospital April 15, 1921, service of Dr. Burr, and died four days later. Prostatectomy had been performed four months previous to admission. Following this operation he gradually developed weakness and numbness of the lower extremities. Within two months

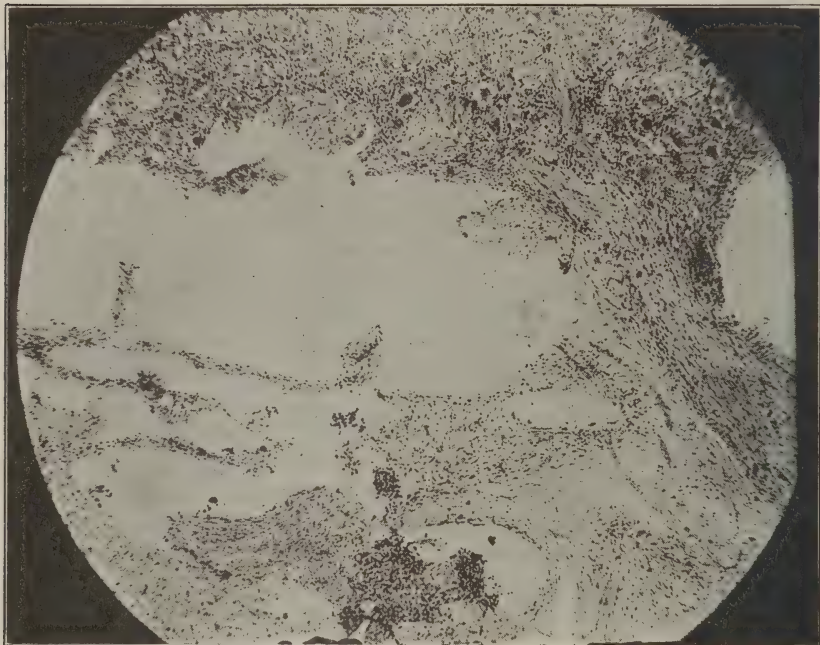


FIG. 6. Islands of cancer cells within the gasserian ganglion and roots.

he became so weak that he was obliged to remain in bed. There was frequent and painful urination. Rapid loss of weight occurred. Examination upon admission revealed marked weakness and spasticity of both legs, especially the right, with slight diminution of sensation. There was bilateral Babinski and ankle clonus. There was no ataxia. The upper extremities and head were normal. The loss of power in his extremities finally became complete.

At necropsy there was found a recurrent growth in the prostate,

spreading to and involving the bladder wall. No metastatic lesions were found in any organ, except a ribbon-like tumor, three inches long, under the dura on the posterior and left side, over the lowermost segments of the cord. The tumor could be easily stripped from the dura. Microscopic examination showed it to be an adenocarcinoma. The spinal cord showed slight ascending degeneration in the posterior columns.

Case XII. Summary: A primary carcinoma of the prostate with metastases to the lungs, liver, lymph nodes and a ribbon-like extradural tumor extending from the seventh thoracic segment to the conus, producing softening in the cord as a result of implication of the blood vessels. Paraplegia was sudden in onset.

H. M., a colored man of forty-nine, was admitted to the genito-urinary section of the Philadelphia General Hospital October 15, 1924, because of difficulty of urination, which came on shortly after an appendectomy. Two weeks before admission he went to bed feeling as well as usual, but upon attempting to arise in the morning he found his lower limbs were paralyzed and that his legs felt "dead." He had no pain and no girdle sensation. Upon examination a moderately enlarged, soft prostate was found. There was a flaccid paralysis in both lower limbs. Plantar stimulation produced flexion on both sides. From the upper third of the thighs downward, sensation was decreased. Retention of urine was complete.

He was transferred to the neurological service of Dr. Lloyd, who found flaccid paraplegia, retention of urine, requiring daily catheterization, and atrophy of the muscles of the paralyzed limbs. He complained of paresthesias from the lower costal margins to the iliac crests. Sensation in all forms was impaired below the tenth thoracic segment to just below the knees. From the knees downward, sensation was entirely lost. Above the tenth thoracic segment there were no neurological symptoms. He developed decubitus, grew progressively worse, became septic and died.

At necropsy a primary carcinoma of the prostate was found, with metastatic lesions in the lungs, liver, peribronchial and retroperitoneal lymph nodes, and a flat, extradural tumor on the postero-lateral surface, extending from the seventh thoracic level to the conus. At no point was the tumor mass thicker than two to three mm.

Microscopic examination showed the tumor to be an adenocarcinoma. There was an incomplete transverse softening of the spinal cord in the lower thoracic region (seventh to ninth segments) with ascending and descending degenerations of the cord. This was due to occlusion of the blood vessels by the tumor.

DISCUSSION

In this group of five patients the ages varied from forty-nine to eighty-one, four of them being over sixty-four years. It is impossible to estimate the time elapsing between the development of the primary tumor and the occurrence of metastasis to the nervous system. In three of these cases the spinal dura was involved, either in one or more locations. In one case the cancer cells were found in the blood stream of the brain, and in the other there was involvement of the bone of the base of the skull with direct extension into the pituitary body and the Gasserian ganglion. The symptomatology naturally varied with the location of the lesion in the nervous system. In the cases involving the spinal dura there was partial or complete paralysis of the lower extremities. In one case the paraplegia was apoplectiform in onset and was found to be due to occlusion of the blood vessel by the tumor mass, rather than by direct pressure on the cord itself. In this case the tumor was ribbon-like in appearance. This case resembled the two reported by Spiller (21). In two cases there were metastases to the bone, and two had involvement of the lungs.

RECTAL GROUP

Case XIII. Summary: Primary cancer of the rectum with metastases to the large and small intestines, liver, lungs and brain.

E. M., a white man of thirty-eight, was admitted to the Philadelphia General Hospital June 30, 1922, service of Dr. Potts, and died in ten days. Seven months before admission he began to have rectal symptoms. He became constipated and the movements were associated with pain. One month before admission he complained of pain in the lower back and two weeks later pain in the occipital region. He gradually lost strength and became bedridden. On examination at the hospital, it was noted that his lower limbs were very weak. He walked on a broad base and swayed, even with his eyes open. His hands were weak. The tendon reflexes of the upper extremities were present, equal and normal. The knee jerks were present but very feeble. The ankle jerks were absent. There was neither clonus nor Babinski. The abdominal and cremasteric reflexes were active. The pupils were equal, slightly irregular and reacted sluggishly. He showed slight weakness of the left face, and a fine tremor of the fingers and tongue. The heart and lungs were normal. The abdomen was tender. In walking there was a tendency to pitch forward. He had incontinence of urine. The eye grounds were normal. The spinal fluid was clear with no increase of pressure. The Wassermann tests of both blood and spinal fluid were negative. The urine was normal. Examination per rectum revealed a large mass. He failed rapidly and died.

At post mortem a large cancer of the rectum was found, with metastatic lesions to the large and small intestines, liver, lungs and brain. Microscopically the tumor proved to be an adenocarcinoma. In the brain was a tumor 5 x 3 cm., involving the posterior part of the thalamus and the internal capsule, extending into the ventricular system, but not obstructing it. Microscopic examination of this tumor showed it to consist of epithelial cells arranged perivascularly, at times breaking through into the tissue forming huge islands of cancer cells with necrotic brain tissue between.

Case XIV. Summary: Primary cancer of the rectum with metastases to the mesentery, liver and along the spinal canal, involving the dura of the lower thoracic segments, with pressure on the cord.

W. G., a white man of fifty, was admitted to the Buffalo General Hospital February 3, 1926, and died March 16, 1926. The onset was sudden, in July, 1925, with intermittent pains in the left lower limb. Within a few weeks these pains became severe and involved both lower extremities. Walking increased the pain. Examination, including Roentgenograms, serological and chemical tests and lumbar puncture, gave negative results. He lost weight rapidly and became very feeble and was then sent to the hospital. He developed tingling and numbness in his feet. From February 3d he had to be catheterized. Neurological examination at this time revealed weakness of the legs, with diminished knee jerks, and absent ankle jerks. Sensation of all forms was markedly diminished in the lower limbs. There was neither Babinski nor clonus. He was unable to walk, had lost considerable weight and complained of marked pains in the legs and about the anus. Examination of the rectum at this time revealed a small mass, well down, with a relaxed sphincter. Roentgenograms revealed involvement of the third lumbar vertebra. During the week preceding his death, the knee jerks were lost and there was complete loss of sensation to the groin, bilaterally.

Necropsy by Dr. Roman revealed a gelatinous cancer of the rectum, just above the anus, which was slightly elevated and indurated, with button-like nodules. A secondary carcinoma in the form of extensive invasion of the spinal canal was found, extending as far as the cervical region. This involved the dura over the lower part of the spinal cord, with compression. Numerous secondary nodules were found in the liver.

DISCUSSION

Both of these patients were comparatively young: thirty-eight and fifty, and both showed early symptoms of the rectal pathology. In one case there was a single large tumor of the thalamus, while the other had an extensive growth along the spinal canal, with involvement of the dura over the lower part of the cord, resulting

in a paraplegia. In the first case the lungs were involved; in the second, the liver. One showed a bony metastatic lesion.

FEMALE PELVIC GROUP

Case XV. Summary: Chorion-epithelioma, with metastasis to the left cerebral hemisphere.

G. B., a white woman of thirty-five, was admitted to the Episcopal Hospital, Philadelphia, March 12, 1925, service of Dr. George Wilson, and died six days later. She was well until the birth of her child, one year before, following which she developed rather abruptly, a palsy of

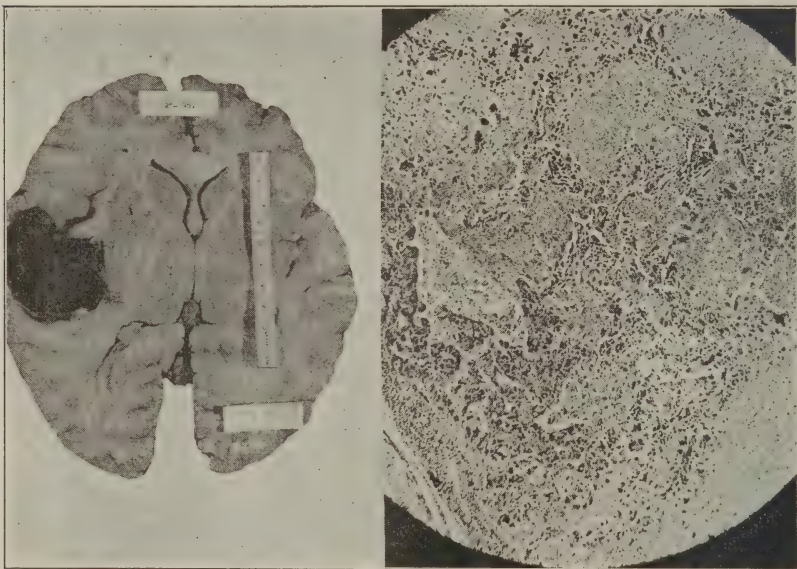


FIG. 7 (a). Hemorrhagic tumor.

FIG. 7 (b). Histologic appearance; chorionepithelioma.

the left sixth nerve, with headache, irritability and some mental dullness. A lumbar puncture revealed a clear fluid with no abnormal constituents. The Wassermann test was negative. Following this puncture she made an apparent recovery in a few days. Twelve months later it became necessary to do a curettage, following which she developed headache, was irritable, and there was some stiffness of the neck and mental dullness. She was again admitted to the hospital. Examination at this time, in addition to the symptoms above mentioned, revealed the pupils to be equal and normal in reaction. The eye grounds were normal. The tendon reflexes were all present and normal. There were no palsies at this time. There was no sensory disturbance. Within a few days she grew worse, became comatose and died.

At autopsy a hemorrhagic mass, 5 cm. in diameter, was found occupying the left lower parietal motor area [Fig. 7]. It was sharply defined and caused enlargement of the left hemisphere with distortion of the ventricular system. Microscopically the tumor proved to be a chorionepithelioma, with much hemorrhage.

Case XVI. Summary: Primary papillary cystic adenocarcinoma of the left ovary, with multiple metastases in the brain and throughout the abdominal and thoracic viscera.

E. J., a single woman of thirty-six, was admitted to the Millard Fillmore Hospital, Buffalo, December 6, 1917, service of Dr. McKee, and died April 29, 1918. One year before admission to the hospital, she complained of vague abdominal distress and at times, pain. Various abdominal organs were at first suspicioned. Some months later she began having intermittent headaches, mainly frontal, with occasional attacks of vomiting, with difficulty in thinking and mental dullness. Examination of the eyes at this time revealed beginning double choked discs. Muscle twitching was present on the left side of the body.

Neurological examination at the hospital revealed slight motor weakness of the left side and double choked disc. The tendon reflexes were active, more on the left side. There were frequent attacks of vomiting and headaches. Mentally she was very dull. A diagnosis of right frontal tumor was made and on December 17, 1917 she was operated. A cystic, gelatinous tumor was removed. Microscopic examination by Dr. H. U. Williams showed the tumor to be a papillary adenocarcinoma. She improved for a while; the headaches and vomiting recurred, she became mentally confused, incontinent, and was very restless. She gradually failed and died April 29, 1918.

Autopsy by Dr. Jacobs revealed the primary tumor in the left ovary with metastases to the right ovary, to the left kidney, the gastric mucosa, the peritoneum, small intestines, the liver, spleen, lungs, pleura, and one nodule in the skin above the right nipple. In the brain were many areas containing gelatinous material, with distinctly visible proliferations along the edges. These areas varied in size from a few millimeters to 1.5 centimeters in diameter, and were found throughout the cerebral hemispheres and cerebellum. The meninges were free, both macroscopically and microscopically. Sections from all the metastatic nodules were similar to the primary tumor and showed the structure of a papillary adenocarcinoma.

DISCUSSION

In both of these cases the ages were practically the same: thirty-five and thirty-six. In the first the history was quite typical of chorionepithelioma, and the brain lesion consisted of a single large

tumor in the motor-parietal region. In the second patient, while there had been indefinite abdominal symptoms, it was not until a brain tumor was diagnosed, localized, and operated that a metastatic lesion was suspected. Only at autopsy was the primary site of this tumor definitely determined. This patient had all the evidences of a brain tumor, including choking of discs. In addition there were extensive metastatic lesions throughout the entire body.

MISCELLANEOUS GROUP CASES

Case XVII. Summary: Primary carcinoma of the left orbit, with direct involvement of the bone to the dura, without involving the brain proper.



(a)

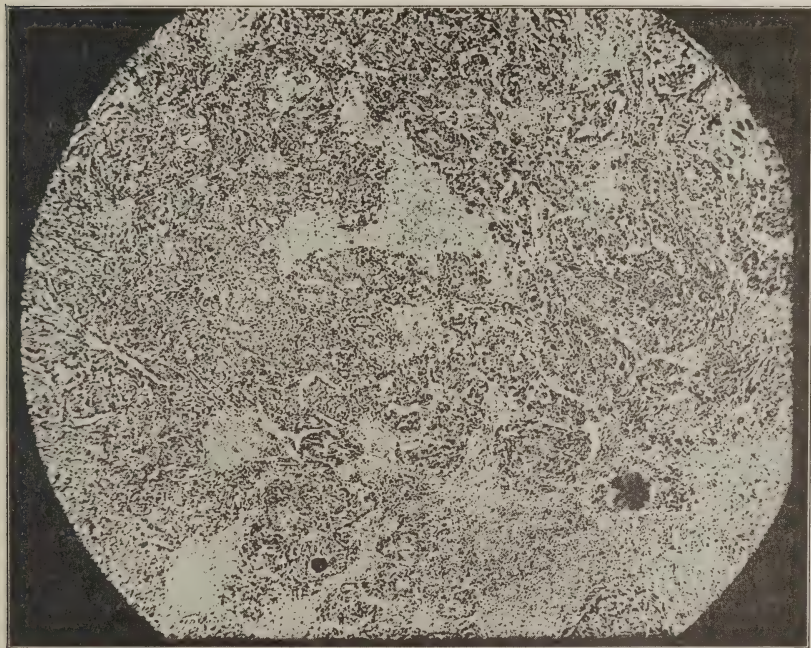
M. M., a colored man of fifty-five, was admitted to the psychopathic department of the Philadelphia General Hospital, December 22, 1925, service of Dr. Gilpin, and died December 24, 1925. A diagnosis of cancer of the left orbit had been made several years before. Recently he became confused. Headaches with occasional fainting attacks had been present for eight years. He had hallucinations and delusions of persecution. His neck was swollen for several months and he had lost much weight during the last five months. Two months prior to admission he had had Roentgen-ray treatments of the orbit. Shortly after admission he became more confused and his memory was poor. The left orbit was markedly involved. He failed rapidly and died in two days.

Post mortem revealed the brain to be normal in size. There were rough areas at the base, especially in the left middle fossa, where the dura

was adherent to the bone. Extradural nodules were seen. The cortical tissue above it was intact. The tumor proved to be an epithelioma.

Case XVIII. Summary: Primary carcinoma of the pancreas with metastases to the spleen, adrenals, kidneys and brain.

R. J., a white man of forty, was admitted to the Philadelphia General Hospital August 20, 1920, service of Dr. Burr, and died six days later. In March, 1920, he began to have headaches, which grew worse during



(b)

FIG. 8. Gross and microscopic appearance of tumor.

the following month. In July he suddenly became unconscious for five minutes. During this period the right side twitched and he remained dull mentally for some days following the attack. In August, 1920, the vision began to fail. At the time of admission to the hospital, neurological examination revealed but little vision in the left eye and only light perception in the right eye. He was dull mentally. The blood pressure was 130/70. His neck was somewhat stiff. There was a positive Kernig sign and the deep reflexes were present, equal and active. He had double choked disc, five diopters in the right eye, and four in the left. Spinal puncture revealed a clear fluid, 20 cells per c.mm. with negative Wasser-

mann reaction. Four days after admission he had a convulsion, followed by stupor and death in two days.

At autopsy a primary carcinoma was found in the pancreas, with secondary nodules in the peribronchial lymph nodes, spleen, adrenals, kidneys, abdominal wall and in the brain. In the brain [Fig. 8] a large tumor, 5 x 4 cm. was noted, occupying the lower posterior parts of both frontal lobes and pressing backwards and destroying the corpus callosum. Microscopically all tumors were adenocarcinomata.

Case XIX. Summary: Primary cancer of the buccal mucosa with metastases to the dura of the anterior and middle fossae of skull, pituitary and pons.

H. S., a white man of fifty-eight, was admitted to the Philadelphia General Hospital March 5, 1923, service of Dr. Burr, and died May 23, 1923. He gave a history of having had a sore mouth for a period of three years. On admission a papillomatous growth was present on the inner aspect of the right cheek, which measured 7 cm. across. There were no glandular enlargements in the neck.

He had had frequent nose bleeding. The blood Wassermann was negative. Roentgenologic examination of the skull, spine and other bony structures failed to reveal metastases. He showed no neurological symptoms. He failed rather rapidly and died.

Only a partial autopsy was done. In the right cheek there was a large ulcerating mass, 7 cm. in diameter. It had perforated through into the right maxillary sinus and upward toward the brain into the anterior and middle fossae. The pituitary and sella turcica were entirely destroyed and replaced by tumor tissue. The floor of the anterior and middle fossae were so soft that they could readily be incised with a knife. The dura of the base of the brain was infiltrated with cancer nodules. On the right side of the basis pontis [Fig.] was a tumor mass, 1.5 cm. in diameter, which compressed and invaded the pontile structure at the level of the fifth cranial nerve. Microscopically the tumor was an epidermoid carcinoma, containing numerous epithelial pearls.

Case XX. Summary: Primary carcinoma of the thyroid with metastases to the skull and the dura, the vertebral bodies and visceral organs.

E. C. W., a white woman, sixty-nine, was admitted to the New York State Institute for Malignant Diseases, Buffalo, Dr. B. T. Simpson, Director, January 8, 1923, and died October 1, 1923. She had been married fifteen years; she was never pregnant. She had never been seriously ill. Six months before admission she observed a mass at the right supraclavicular space, measuring two inches across, which was soft, but fixed. This

grew rapidly. One month later she observed a nodule in the left breast. Two months later a nodule on the left side of the head appeared, and one month later another nodule on the opposite side of the head. Two weeks before admission a swelling was observed in the left side of the neck. During the past year she had lost twenty-five pounds. Upon admission there was a mass in the right supraclavicular area, measuring four inches across, two inches thick, and a large nodule in the left side of the neck, over the sternum. She had complained of headaches for several weeks. There were no neurological signs. All laboratory tests were negative. She failed rapidly and died.

Necropsy revealed a primary adenocarcinoma of the thyroid in an accessory portion, beneath the clavicle, with metastases to the regional lymph nodes and to the bones.

There were three large nodules in the skull, one being over the bregma, one over the temporal area and one in the occipital area. The cervical and the lumbar vertebrae were involved. There was a diffuse mass on the under surface of the dura, over the left hemisphere, compressing the brain to a slight degree. The liver contained many small nodules. Many bronchial lymph nodes were also involved. The metastatic masses were all adenocarcinomata.

Case XXI. Summary: Primary carcinoma of right ear with direct involvement of the bone to the dura. The brain itself was not involved.

E. L., a white female of fifty-two, was admitted to the Philadelphia General Hospital January 20, 1926, service of Dr. Fielding Lewis, and died April 27, 1926. Eleven years before she had a right hemiplegia, the residuals of which still existed. In January, 1925, she complained of severe pain in the right ear, associated with an occasional bloody discharge. In August, 1925, the right ear and the area about it became swollen and tender. In October, 1925, a radical mastoid operation was done for the severe pain and swelling. The wound did not heal and later microscopic examination of some of the tissue revealed it to be malignant in nature. In January, 1926, she had a severe hemorrhage from the right ear. During the winter of 1925-1926 she had radium treatments. In February she complained of severe headaches and became restless. From then on the pain increased in severity, as did the headaches and restlessness, and she required large doses of sedative. She grew rapidly weak and died.

At necropsy there was noted necrosis in the floor of the right middle fossa of the skull and a nodular tumor attached to the dura. The dura itself was much thickened and adherent to the under surface of the right temporal lobe. The brain tissue in relation to this was soft and necrotic looking [Fig. 10]. On section the carcinomatous tissue was found loosely attached to the outer surface of the dura. Small islands of

epithelial cells invaded the dura and many nodules were subdural. These latter pressed in on the cortex but did not actually invade it. The cortex in this area was softened beyond recognition, containing many polynuclear leucocytes and gitter cells.

Case XXII. Summary: Following Roentgenologic treatments, for the removal of hair, a carcinoma of the chin developed with extradural metastases of the cord, producing clinically a sudden paraplegia.

A. W., a white woman of forty-two, was admitted to the Philadelphia General Hospital March 26, 1926, service of Dr. Carnett, and died May 17, 1926. In an attempt to rid her face of superfluous hair six years ago, Roentgenologic treatments were given twice weekly for seven months. One year after the last treatment an "x-ray wart" appeared on the chin. After about two years the growth disappeared, but two years ago it reappeared. Three attempts had been made to excise it, the last time by cautery, but it recurred in two months. For a time radium treatments controlled it, but soon the glands in the neck became involved. An attempt was made to excise the "ulcer" again, but it recurred. She was sent to the hospital for "lead treatments."

Physical Examination.—There was a diffuse scar on the chin and neck, in the midst of which was a necrotic looking mass. The cervical lymph nodes were enlarged, hard and fused. Three days after admission she received her first ampoule of lead intravenously, with slight apparent improvement in the local condition of the neck.

Ten days after the second injection she began to complain of pains in the left chest at the level of the eighth and ninth ribs. Five days later she suddenly developed a complete motor and sensory paralysis below the umbilicus. The sensory level gradually ascended until it reached the level of the fourth intercostal space, prior to her death, one month after the sudden occurrence of the paraplegia.

Roentgenographic studies showed a suspicious area about the eleventh thoracic vertebra. No other bones were apparently involved. At post-mortem the brain was grossly normal. On removal of the spinal process and lamina of the spinal column, a gelatinous mass was found to fill up the spinal canal. Some remained attached extradurally in the posterior aspect and some to the bone. This tumor mass extended from the level of the sixth segment to the lower end of the thoracic cord. The spinal cord substance between the segments was soft and mushy and had lost its normal anatomical markings. Microscopic examination showed the tumor to be a carcinoma (probably of the melanotic type).

Case XXIII. Summary: Carcinomatous degeneration of a teratoma of the mediastinum, with metastases to the lungs, thyroid and leptomeninges.

J. S., a white man, twenty-seven, was admitted to the Emergency Hospital, Buffalo, March 1, 1926, service of Dr. James Carr, and died in three weeks. On January 10, 1926, he slipped and struck the back of his left shoulder against an object. He continued his work. On the next day he had pain in left shoulder and consulted his family physician, who found no evidence of injury. He rested for three days and then returned to work for the next fifteen days, complaining of pain in the shoulder and back. He remained at home during the entire month of February because of the pain. He became irritable, had headaches, and it was noted that he was becoming mentally dull. On admission to the hospital he complained of headache, dyspnea and pain in the left chest and shoulder. A neurological examination several days after admission revealed rigidity of the neck, a definite Kernig sign, decreased reflexes in the lower extremities, while those of the upper extremities were normal. No abnormal reflexes were present. Sensation was normal. Pupils were of medium size, round and reacted promptly. The eye movements and eye grounds were normal. Hearing was not affected. The temperature, pulse and respiration were normal. Lumbar puncture revealed a clear fluid, not under increased pressure. There were twenty-eight lymphocytes to the c.mm. Globulin was increased. A fine pellicle was visible in one of the tubes. Wassermann tests of both blood and spinal fluid were negative. No organisms could be found. Marked dyspnea was present, and Roentgenologic study of the chest revealed a large tumor mass in the mediastinum, the nature of which could not be determined. Lethargy and dyspnea increased and his temperature suddenly rose to 101° F., and pulse to 100. Lumbar puncture was repeated at this time, which gave practically the same results as the former study. He became comatose and died March 20th.

Necropsy made by Dr. Jacobs revealed a large tumor mass in the mediastinum, which, upon section, proved to be a teratoma, which was undergoing malignant degeneration. Macroscopic nodules could be seen breaking into the arteries and veins. Small nodules were found in the lungs, and one nodule was present in the upper left lobe of the thyroid. Examination of the brain showed a normal dura. The pia-arachnoid at the base, particularly in the interpeduncular space and about the Sylvian fissures, was much thickened and studded with small granular appearing masses. Microscopically the brain itself was clear. The granular masses of the meninges were metastatic adenocarcinomata. The cancer cells were located in the perivascular and subarchnoid spaces [Fig. 11].

DISCUSSION

In the first case, apparently the dura acted as a barrier to the extension of the cancer mass and the brain tissue itself was unaffected. In the second case the history differed in no way from any other case

of brain tumor without symptoms referable to the primary lesion. In the third case the brain involvement resulted from direct extension from the bone of the base of the skull. In the fourth case the primary origin of the tumor was in the accessory portion of the thyroid with secondary involvement of the bones of the skull and the dura, probably by direct extension. In the fifth case, originating in the external auditory canal, the extension was directly into the skull cavity. In the sixth case, the original cancer developed in the skin of the chin as the result of Roentgenologic treatment, and metastases developed extradurally about the cord, resulting in a sudden paraplegia, similar to the cases described by Spiller. (21) In the seventh case originating from the mediastinum, the clinical neurological picture was that of a meningitis of tuberculous form, which the laboratory data in part, substantiated. Even the gross examination of the brain suggested miliary tubercles in the leptomeninges, and only a microscopic examination revealed the true nature of the lesion. This error in diagnosis has been noted before in the literature, particularly by Schwarz and Bartels, (12) who were led to the correct diagnosis by study of the morphology of the cells in the spinal fluid.

COMMENT

In an analysis of the records of the twenty-three cases which we have here presented, it is of interest that seven of the metastatic tumors had their origin in the breast and five came from the prostate; a percentage which cannot altogether be explained by the greater incidence of cancer in these organs. While the possibility of an extraordinarily rich lymphatic drainage must be kept in mind in explaining this high percentage, still other organs under similar conditions do not send their metastases to the nervous system so frequently.

According to location in the nervous system, the metastatic lesions can be divided into the following groups:

- (1) Those which are in relation to the dura.
- (2) Those which are within the nervous tissue itself.
- (3) Those within the perivascular spaces.
- (4) Those within the blood stream.

While it is more common to have multiple metastatic lesions in the nervous tissue, it is remarkable that most of our cases fit into the first of these four groups. This naturally suggests that in each of these subdivisions the method of dissemination is different. In the literature it is very frequently mentioned that the dural tumors result from lymphatic dissemination and those in the brain tissue come through the blood stream.

From the clinical viewpoint the lesions affecting the brain are to be separated from those involving the spinal cord. In the former the cases fall into these groups:

- (1) Cases in which there were few or no symptoms.
- (2) Cases with the typical features of a brain tumor.
- (3) A group in which toxic symptoms occurred.

Our case of meningitis carcinomatosa is very unusual and gave the clinical picture of a tuberculous meningitis. Similar cases are reported in the literature.

In the spinal cord group we likewise can have three pictures:

- (1) Those giving the clinical evidences of a cord tumor.
- (2) Those with vague, indefinite signs.
- (3) A group in which the first symptom is a sudden paraplegia, and as shown by Dr. Spiller (21) is due to vascular occlusion as the result of pressure by the tumor. Two cases in our series belong to this subdivision.

CONCLUSION

(1) Certain organs have a predilection for sending their cancers to the nervous system. The breast and prostate are notorious offenders.

(2) The metastases may occur at any time, even years after the appearance or operation on the primary tumor.

(3) There is no characteristic group of symptoms by which a metastatic tumor to the nervous system is to be diagnosed.

The history of a primary tumor, particularly in the breast or prostate, is of great importance.

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SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY

THE FOUR HUNDRED AND THIRTY-FOURTH REGULAR MEETING,
MARCH 1, 1927. THE PRESIDENT, DR. GEORGE H. KIRBY,
PRESIDING.

The following program was carried out:

NEOKINESIS: THE CONTRIBUTION OF THE MAMMALS TO THE EVOLUTION OF THE BRAIN

DR. FREDERICK TILNEY

Discussion: Dr. Smith Ely Jelliffe said: I hardly know that there can be any discussion of what Dr. Tilney has so gracefully, completely, and clearly set forth. Certainly there is no issue to be taken as to the evidence which has been so vividly sketched which is necessary to orientate us to the general problems of evolution. There are one or two points which Dr. Tilney touched upon, which interested me greatly, and I might like to lay a little different emphasis upon them.

There probably is no question in our minds of the importance of morphological study, not only from the phylogenetic point of view, as has been so beautifully illustrated, but also from the ontogenetic point of view. Dr. Tilney has already said that functional secrets are all too illy able to be read in structural precipitates, and I agree with him very fully. He did not in any sense of the word tend to convey to us the idea that only through structure can we read function. In fact, I feel quite sure that he would agree with me if I should emphasize the opposite or functional point of view, and argue that structure came to be what it is in response to function. I should like to have heard one attitude of mind a little more forcibly impressed, and that is that a little more attention might have been paid to the effects of environmental stimuli. Dr. Tilney touched upon this, but I gathered that he was more at home in viewing the machine as independent, from within. The environmental stimuli are the sole sources of energy which contribute to the development of the human machine. We have no better working formula than that energetic formula which says that the human machine, like all other machines, survives longest through its increased capacity to capture, to transform, and to deliver energy which is found in the environment. In that urge for increased capacity to capture more energy, we therefore get increased structural bits of apparatus that enable it

to be transformed; and also those bits of apparatus have more amply permitted the energy to be discharged. With a little more emphasis laid upon the environmental factors in the story of the capture, the transformation, and the delivery of energy, I think I would have been a little more gratified.

There is one place in Bergson's "Creative Evolution" where he says that "the cerebral mechanism is arranged just so as to thrust back into the unconscious almost the whole of our past, and to allow beyond the threshold only that which will cast light upon the present situation"; in other words, to do the work in hand. At the most a few superfluous recollections succeed in smuggling themselves through the half open door. These memories, messengers from the unconscious, dimly remind us of what we are dragging behind us unawares. As Dr. Tilney told us the story of the mammal, *homo sapiens*, or as Bergson would prefer to call him, *homo faber*, and of his tapping of the stick against the ground, and the prompt disgorging of the loot that the reptile had more or less completely ingested, I was reminded quite forcibly of some types of quite similar reactions on the part of the disgorging of loot by *homo sapiens*, by the slight tapping of legislative and other types of stimuli in the environment. Thus, whereas I am perfectly willing to agree most heartily with the reader of the evening concerning delayed reactions, and the other criteria which were given us as tending to separate us from the reptiles, at the same time I cannot help but emphasize the fact that we react almost as promptly as the reptile, with those bits of unconscious mnemonic inheritance patterns to which Bergson alluded and concerning which Freud has made us all too keenly aware.

Dr. Walter M. Kraus said: It is always a pleasure to listen to facts, not theories, and of these no discussion is possible. But we are all like puppies, who, if they should happen to notice a turtle wending its way across the road, crowd around to look at it from many points of view. The turtle to me is symbolic of knowledge, it sometimes stops, pulls in its head so that one scarcely knows the direction in which it is going, and it always goes very slowly. Each one of us is a different sort of puppy and looks at the turtle from a different point of view. I look at these facts which Dr. Tilney has given us from a somewhat different point of view than he does.

Dr. Tilney has described the development of certain infracortical structures which are concerned with movement. He has emphasized that the increase of these infracortical structures runs roughly parallel with the increase in size of the cortex. Is it not possible that some of the increase of these infracortical structures is for the purpose of taking care of an increased number of new muscles and perhaps an increased volume of old muscles? If, for example, we compare the muscles of the amphibia with those of the mammal we find that there are a considerable number of very important changes. Since each muscle has sensory end-organs, more muscles would demand more end-organs, more fibers on the afferent side of the central nervous system, and more anterior horn cells. As anterior horn cells are added, other cells and neurones in suprasegmental structures to con-

trol these anterior horn cells must be added. The number of neurones (fibers) would increase, and the cellular nuclei themselves would increase in size. In two closely related animals, one of which has a very much greater volume of muscles tissue than the other—though the individual muscles may be nearly the same—there would naturally be more receptor neurones and cells, and corresponding cells in the suprasegmental levels.

There are apparently two types of activity going on: one, the appearance of structures needed to take care of old muscles in a new way; the other, an increase of structures to take care of new muscles in an old way.

It is also apparent that the growth of the cortex is secondary either to the ability to register more stimuli derived from environment, or an increased ability to retain these as memories. In response, the growth of corticofugal pathways naturally increases.

Dr. Tilney has emphasized another point, notably the evolution of the upper extremities and its difference from the lower extremities. This interests me very much as bearing upon my own point of view dealing with the level of various arcs for postural patterns. This difference of postural patterns of leg and arm is manifested most beautifully in classical hemiplegia in which the posture of the leg is still one determined in the spinal cord, while that of the arm is determined above the mesencephalon.

The leg has never evolved a posture in man comparable to that of the prehensile arm. Just because certain monkeys have a prehensile leg it does not in the least follow that we may expect such a pattern in man.

In closing, I wish to express my great appreciation of the stimulating information which Dr. Tilney has given us. It has been a great privilege to learn the many facts which he has presented to us.

Dr. Israel Strauss said: It has been a great pleasure to listen this evening to Dr. Tilney. I greatly admire the tremendous energy which is exhibited to-night in the work which he has done. Dr. Tilney has shown us most beautifully the changes in morphology which seem to go along with development of function from the lower animals up to man. Whether function induces the morphological changes or whether the morphological changes are due to some as yet unknown evolutionary force which then influences function, is a question which I believe has as yet not been determined. However, there can be no question as to the great value of the work such as has been presented to-night. There are changes in morphology which occur as higher species develop from lower. There are changes in function which are exhibited by different species as we ascend the scale. The relationship between these two expressions of evolution is something for the future to decide.

Dr. Tilney (closing the discussion) said: With reference to Dr. Jelliffe's view about environment, of course I am in sympathy with it. We all believe that environment has been one of the great decisive influences in the process of evolution. Carl Akeley, before his death, had made a real advance for studying the environment. Through his

efforts, the King of Belgium set aside a large tract of land in the Congo which has been made a gorilla sanctuary, with the idea that the great anthropoid would still have an opportunity to remain on earth and to be studied. Akeley's interpretation of the gorilla's behavior and disposition was different from mine. He thought the animal was a timid and gentle creature, that in all probability it would be possible to go into the sanctuary and get some idea of what environment had to do with its particular specialization. Yerkes, Koehler, and others are doing exactly this work to see what influence environment has on various determining habits and characters in the primates.

As a whole, this is a profound subject. I would recommend that you listen to Professor Henry Fairfield Osborn on this subject. It would be most enlightening to hear him explain his tetraplastic theory of evolution.

The other point that Dr. Jelliffe makes about the tendency for the neopallium to retain the memory of its entire genesis, its individual experience, its racial experience, and its phylogenetic experience, is something I endeavored to bring out in my opening discussion. This retention is not to be doubted. I feel that the individual recapitulates the experience of its race and its phylum.

With reference to Dr. Kraus' contention concerning the influence of increased musculature as having a definite rôle in the development of the brain and the neopallium, particularly, I think it is a fair supposition. I am not prepared to meet this theory now because I think there are certain real criticisms which might be raised against it in studying such closely allied forms as are contained in the primate order. Professor George Huntington, in his noted contribution to the musculature of the primates, states that the variation in muscles is extremely small in this group.

When we come to consider such forms as the cetaceans or other animals which have made secondary adaptation to the water, perhaps we may find the muscles playing more of a rôle in the development of the neopallium. But here the development is largely in the parietal area, and does not enter in any particular way into those cortical constituents and components of the neopallium which count so much in mankind and in the higher vertebrates.

As to the question of neurobiotaxis, this indeed is a confusing field. We cannot go into it now. I do not for example know why it is that pallio-pontile fibers come down to the pons and finally connect with the lateral lobes of the cerebellum. This may be due to a neurobiotactic influence; it may be caused by something else, for further investigations to bring out. It only proves to us that this field of morphology is by no means exhausted or sterile. In reality it is a most fertile field in our study of neurology. It is the one field where both feet may be kept on the ground. The problems here proposed are all morphological problems, and the answers to them may well bring to a solution some of the more complex psychological difficulties which confuse us to-day.

In answer to Dr. Strauss' doubt, I say I am delighted he has it, for without doubt all science would cease to be of interest. It is the

one thing which makes us desire to go forward. I feel myself confused because I have lack of knowledge, and doubt is nothing more than the state of mind due to this lack; when we begin to know, then doubt will go out of the window. It behooves us not to content ourselves with existing knowledge, but to busy ourselves in an energetic attempt to acquire more knowledge. We have only begun to scratch the surface of the field of comparative morphology of the brain. When we come to the great field of invertebrate neurology, we are practically in primeval darkness. Whenever, the question of evolution comes up, and I hear of these perfectly legitimate and well understood doubts and confusions, it is rather stimulating than otherwise. I must confess that I have just as many doubts myself as Dr. Strauss; but I have an irresistible desire and ambition to settle just as many as I can before I die.

RADIATION IN BRAIN TUMORS

GEORGE H. HYSLOP, M.D., and MAURICE LENZ, M.D.

(By Invitation)

(*Author's abstract*)

Our study of the problem of radiation in brain tumor has been directed toward the technical side of treatment and also the analysis of the effects of treatment in twenty cases of glioma of the brain verified by operation.

Previous reports have been unsatisfactory in many respects. Our own report should be regarded as a preliminary one, since our material is relatively small.

We have felt it important to correlate clinical results with the mode of therapy used and the dosage administered. To do this required knowledge of the location, size and extent of each tumor. We find that external radiation by either the radium pack or by high voltage roentgen ray are by all means the most efficient forms of radiation. We observed that patients receiving in the tumor tissue doses of erythema units or more at a given treatment showed a more definite response. Smaller doses were less likely to be followed by clinical improvement. In giving treatment one must therefore estimate the doses of radiation to tumor tissue.

The study of our clinical material enables us to put forward the following tentative conclusions:

1. Radiation may produce what is called an immediate reaction. This consists of an increased intracranial pressure, both general and focal in nature. It may commence in a few hours after the application of treatment; seldom lasts more than two days; and may be dangerous in certain cases. It has no relation to the appearance of clinical benefit. Such a reaction can be avoided by administering each course of treatment in fractional doses.

2. Half of our cases were benefited by treatment. This benefit consisted of clinical improvement of a type or degree not observed

to occur spontaneously, and not attributable to operation. In some of our patients who had several courses of treatment, we found increase of symptoms preceding each treatment and immediate benefit following each treatment. The duration of benefit varied from a few weeks to periods of several months. Seven of our 20 patients had tumors of malignant type. Five of these benefited by radiation.

The infiltrating tumors were more amenable to radiation than the cystic tumors, particularly those of the cerebellum.

3. We feel that preoperative radiation has little justification. Prior to exploration the pathological diagnosis is uncertain; and even if a tumor were present, its nature, localization, and extent cannot be determined. Furthermore, an immediate reaction to radiation might prove serious where there is no decompression.

We expect to give the details of our study in an article which we are submitting for publication.

Discussion: Dr. Douglas Quick (by invitation) said: I very much appreciate the privilege of being here as a guest of the Society this evening, and I am deeply indebted to Dr. Hyslop and Dr. Lenz for their careful survey of these cases. I think it is very timely. Previous reports have been very indefinite, and I am afraid some of them very glowing. Certainly this analysis cannot be criticized from the standpoint of overdrawn optimism, at any rate. I think it shows those of us who are interested in the problem a good many things. First of all, though the group is a small one, the cases show the very great inaccuracy of the manner in which we have treated patients, both as far as the dosage is concerned and the way in which the dosage has been timed. The amounts of radiation used and the character of it can certainly be improved upon very considerably. The computation of the various types of radiation and the physical factors concerned was very instructive. I think they might have spoken a little more fully about the quality of the radiation. The measurements given told about the quantity of radiation absorbed at a given depth. I think as we try to apply the knowledge obtained in dealing with neoplastic disease, in other locations, that we find the quality of radiation and the factor of the wave length have a great deal to do with the biological effect. In plainer English this means that for a given percentage of radiation absorbed, radium has some distinct advantages to offer as compared with the same quantity of X-ray radiation. In the method of employing radiation, we have had very little, practically no experience in using interstitial radiation; that is, radium buried in containers or seeds, either left in place or taken out afterwards. I would like to say another word about that later on. The investigation showed many of the dangers of radiation, and that certain of the major dangers can be avoided in the future in dealing with these cases. I was very glad to hear him say something of the histological basis for deciding or at least predicting something of the effect which may be expected from radiation in a given case, and also its application to the kind of radiation which may be necessary in certain cases. In applying physical agents to any type of neoplastic disease I think the histological factor must always be borne in mind most carefully.

One other observation which they made is that little or no radiation effect was noted in the post-mortem material available for study. That indicates but one thing: that practically all of these cases were far under-rayed as compared with what we have found is necessary in treating more accessible tumors and the response obtained in them.

What does all this mean? To me it means one thing, that those who are interested in the problem of neoplastic disease in general, and those who are particularly interested in the use of physical agents in treating them, and the neurologist who is interested in treating them, will be able to study this bit of information and treat a certain type of case a little bit better. In other words, will be able to play around with the more advanced and postoperative cases to a little better advantage. I do not think it places us at all in the position to put over the problem of using physical agents to the best advantage in the treatment of brain tumors. We all know that localized, accurately placed, interstitial radiation, where applicable, is by far the most efficient means of radiating any growth. The only man who can do that is the neurosurgeon, and I think that until he does this, we will not get the best that is available from the physical agents in treating brain tumors. Some sympathetic brain surgeon must interest himself in the treatment of brain tumors by radiation, and limit a little bit the enthusiasm for the radical attempted removals where the outlook is very slim on the other side.

Dr. Israel Strauss said: Dr. Hyslop and Dr. Lenz gave me the privilege of reading their paper before this presentation to-night, and I was impressed first by the care with which they have gone into the work, and particularly with the importance of the work of preliminary investigation. Secondly, I was impressed by the fact that we need a great deal better brain surgery in the city of New York. I see no reason for radiating cystic tumors of the cerebellum. I think they should be cut out, especially as many of them are not of malignant type. The same is true of the cystic tumors in the right temporo-sphenoidal lobe. They would be better treated by complete removal. I think that is a far better method of treating tumors of the brain than radiation. That leaves one the malignant, infiltrating growths in any region of the brain, especially in the region where its removal, even if it may be successful, would endanger the life and cripple the patient. It is interesting to know that two or three of the spongioblastomata, which are malignant and consist of a cell of embryonal type which ought to yield to this method, did show considerable improvement, so that I hope further studies in this line will be directed to that type of growth, and we will get results in a condition which is hopeless otherwise for most of us.

Dr. Byron Stookey said: In referring patients for deep radiation to Dr. Hyslop I have felt that they would receive not only thorough radiation at the Memorial Hospital but also competent neurological supervision during the immediate interval and thereafter.

Drs. Hyslop and Lenz have told us what they can do for certain types of brain tumors. What can the neurosurgeon do to help them give more thorough radiation? Obviously accurate localization as to depth and extent of the tumor is a most important factor. Unfor-

tunately this is extremely difficult to do since deep tumors may show very little difference in structure or appearance from the immediate brain tissue in which they lie. If the tumor is not removable verification of the tumor by removal of a section or by aspiration of tissue should be done so that the cell type of the neoplasm may be determined and the prognosis under deep radiation the better be made.

By leaving a decompression when this is possible factors of safety will be given for the course of radiation since radiation causes edema and swelling of the tumor bed. Swelling of the tumor bed when enclosed in two rigid walls, such as the dura and the cranial vault, may be dangerous, especially in posterior fossa tumors. In this connection I would suggest that hypertonic saline or glucose be given intravenously to diminish edema following radiation. These could be important and valuable aids in overcoming edema since we know that they cause marked shrinkage of the brain fluid.

Dr. Hyslop has referred to the changes of tumor cells after radiation in two of his cases. To these I should like to add a third. A medullablastoma of the fourth ventricle in a child four years old was so extremely vascular that removal was considered impossible and a decompression was left after removal of a small part of the tumor for verification of the clinical diagnosis of medulloblastoma. The child was given radiation and again in six months another attempt at removal was made. This time the tumor was entirely taken out with the exception of a small bit which arose from the medulla and without any line of demarcation between it and the medulla, so that we were forced to leave the remnant of the tumor which invaded the medulla.

The gross appearance of the tumor at the second operation was quite different from its appearance at the first operation; its color was grayer and less red. It was decidedly less vascular and consequently most of it could be removed. Dr. Penfield very kindly studied the sections both before and after radiation and reports a marked difference in the cellular characteristics and in the vascularity of the tumor. Thus radiation may be of value in changing the character of the tumor and in diminishing its vascular bed so that removal at the second operation after radiation may become possible, as was the case in this instance. This particular phase of the value of radiation has not been stressed and I think it an important point.

Another point and one of no little importance is the psychological effect of radiation on the family as well as on the patient. They feel that all hope has not been lost and that chances of prolongation of life are not completely swept out from under them. The fact that something is being done is a source of great comfort to both the family and the patient. That they have not been abandoned and that hope of improvement may still be had by radiation is of value to them. Such sources of comfort are important in the treatment of the patient as well as the family.

It is a pleasure to see such painstaking and thorough work in this phase of the treatment of brain tumors as Dr. Hyslop and Dr. Lenz have presented.

Dr. Michael Asnato said: I should like to ask whether in the experience of the gentlemen who read this paper the increased intra-

cranial pressure produced occasionally by improper radiation was ever expressed clinically in their experience by an increase in the swelling of the disc. We have a patient at the Post-Graduate Hospital who developed a rapidly increasing papilledema following X-ray therapy.

Dr. Lenz (closing) said: I would like to take up two points emphasized by Dr. Quick, namely: the question of difference in quality between radiation from externally applied radium and high voltage X-ray therapy; and secondly, the possibility of using interstitial radiation in gliomas of the brain.

I agree with Dr. Quick's contention that experience with irradiation of neoplasms in other parts of the body by large amounts of radium at long focal distances seems to give better clinical results than are obtained by high voltage X-rays. Our series, however, is too small to permit us to pass judgment on this point; and the focal distance of the radium used in our cases was 6 cm., while that of the X-ray tube was 30 cm. or more. A comparison between these two agents is, therefore, not justifiable from our material. I cannot agree with the second point regarding interstitial radiation. Dr. Quick has had much more experience with interstitial radiation than I and is, therefore, in a better position to judge what he can accomplish by this method. However, success of interstitial radiation depends on the accurate insertion of the radium-bearing needles throughout the entire tumor mass. This is a difficult problem in the majority of infiltrating gliomas as the outer limits of the growth cannot be seen at the time of the operation. It seems more rational to attack such a growth by external radiation as the likelihood of irradiating the entire tumor is greater.

Dr. Hyslop (closing) said: Dr. Strauss mentioned radiation of cystic tumors. We had striking results in three cystic tumors, and one was a spongioblastoma. I do not see any reason for not radiating.

Dr. Stookey referred to the fact that radiation may be helpful in the eventual removal of a tumor. By giving fractional doses, we obviate the dangers of hyperemia.

Dr. Osnato asked about swelling of the disc during the immediate reaction. We have not seen it in our series, but it is recorded in the literature as occurring.

THE WASHINGTON SOCIETY FOR NERVOUS AND
MENTAL DISEASES

NOVEMBER 18, 1926, DR. WM. A. WHITE, PRESIDING

CERTAIN PREPOTENT NOTIONS IN SCHIZOPHRENIA

BY HARRY STACK SULLIVAN¹

[ABSTRACT]

This paper continues the consideration of peculiarities in schizophrenic thinking: certain contents which reflect the most strikingly maladjustive steps in conscious formulations pertaining to external realities. After reviewing the work previously reported from his hospital, the author touches on the evolution of primordial panic and develops the psychobiology of sentiments and the growth of symbol cadres which take the form of words. It comes to pass that, as "the more noval feature of an event tends to be the content in awareness, the cognitive aspect of any symbol," so "the awareness of the articulate vocalization, the cognized and recognized *word*, stands out in distinction to its conative and affective aspects in the total organism." In considering the case "in which speech tends to replace other behavior, to be substituted for action and to become the sole response to situations which call for other activities, we must consider what we may call *fictions*." "Fantasy is a form of activity of symbols rather than of the organism, the latter being inhibited by other symbol activities. It tends to occur when a potential energetic condition of the organism is brought about by a situation too complex for immediate response (kinesis). When this activity is well represented in awareness, we call it reasoning. . . . Other factors not intervening, such symbol activity proceeds until a basis for overt action is found, or the stimulus character of the complex situation is dissipated in the fantasy process." The effect of this latter phenomenon in producing maladjustive end-states, particularly with regard to the social relations of the individual and the origin of sub-psychotic (*e.g.*, perplexity) or full psychotic thinking and behavior is traced.

Tracing the origin of "frames of reference" to the intrauterine precepts, the author derives from them and the infantile experience situations incorporating powerful impulses and vigorously felt affective aspects, poorly represented by cognitive content of the ordinary sort. These grow into prepotent notions which in the face of apparently insoluble life situations are used in fantasies which we call schizophrenic. A number of typical examples are dealt with.

Abstract of Discussion

Dr. Gilles (Baltimore): This refers to the power of a word or the power of a name. The illustrations from primitive psychology, from primitive peoples, show us it must go away back to the con-

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sciousness of the race; it must go very far back. It has interested me very much in that connection from the standpoint of primitive man; the reading of social anthropology—really it must go back very far in our consciousness.

Dr. Hall: I have thought in hearing this paper, and especially in regard to the development of ideas of good, etc., of the importance in the schizophrenic of their sense of values. Perhaps the schizophrenic outbreak itself might be regarded as a revaluation of standards of value. Whether the patient is satisfied in the outcome may perhaps pertain to his new valuations.

Dr. White: The general movement of psychopathology to-day is very interesting. We had an old descriptive psychiatry and then we had thrown into the arena the interpretative psychology of the psychoanalysts. Then the attempt followed to interpret the psychoses along psychoanalytic lines, and now we find, roughly speaking, two groups of psychopathologists: those who follow the literal psychoanalytic formulations and those who—have been stirred into activity by the interpretative results claimed by the psychoanalysts but not being in sympathy with the whole psychoanalytic notions—undertake interpretation along lines of their own. I take it that Dr. Sullivan belongs in this latter class. He has come to feel that there is necessity for a formulation along more basic lines than perhaps the ordinary psychoanalytic interpretations can provide. And he therefore undertakes to lay a foundation by a study of the origin and development of the whole psychic apparatus.

There have been a number of attempts made to formulate general psychopathological fundamentals. And these interpretations and efforts at formulation leave me a great deal confused, and I see in the entire situation much more of hopefulness because of the numerous efforts that are being made than of clarification because of results which stand out as having been accomplished and which are free from serious criticisms. I feel sure that these efforts in all these various directions will ultimately result in the formulation of certain laws which in turn, as all formulations of laws do to some extent, accomplish the bringing of a great many things into relation with a few simple laws. Therefore I would like, from a somewhat critical point of view, to discuss a few of the things Dr. Sullivan has said.

I am in very full agreement with him in his effort at defining the symbol, in a way which shows very definitely that the *word* is not the symbol. The word is nothing more than a label for a situation which is infinitely complex. If I were to be critical of some of the things which he said, I would say that he has perhaps himself used these labels in what I might think a rather complicated way. Of course, he has his own way of thinking. I have tried to retranslate his thoughts into my own labels. For example, "Oral Complex." He has likened the complex not so much to a thing in itself, but more to a series of roads over which various travelers may find their way from time to time. That leaves one perhaps a little confused, and I wonder if perhaps he does not mean what I understand as "traits of the personality make-up of the individual"; I mean a part of the

personality which has been laid down to some extent at least in structure—that the personality tends to discharge itself in its various adjustive tendencies along certain lines more than it does others. With regard to the nipple, I might make similar comments. When the nipple is withdrawn the infant experiences one of his first contacts with reality which has a tendency to build up an appreciation on his part that external reality is something more or less distinct from himself and which he no longer can control at his will, and which, therefore, calls upon him to develop words—which I have called dexterities—for the purpose of bringing to pass the things he wants in this external reality. For a long time I have held the notion that thought is due to interference and that the distinction between thought and action is only a distinction in process. I have explained to my students that when action becomes thought it simply means that there is some impediment and what has taken place is a damming up of the process on the way, and thought is developed much as heat is developed in a resistant medium placed in the course of an electric current. I have a lot of notes here of points that I might mention. I merely want to call attention to the fact that whereas I believe that we necessarily have onto- and phylogenesis intimately entwined in schizophrenia, so we find it in every human life. I think the only reasonable procedure is to make our search for ontogenetic factors complete, and then what is left may be perhaps properly designated as phylogenetic. Fantasy, Dr. Sullivan says, is an activity of symbols rather than of the organism. If I have been right in saying that thought process is only a delayed action, then I think I would be right in saying that thought probably doesn't exist without fantasy; that fantasy only becomes thought where there is a preponderance of going over into action. The fact that a proportion of fantasy results only in action in conscious awareness does not deny it as action; we believe the results are activities which are expressed at lower levels of consciousness, and that fantasy of the schizophrenic is followed by action or is associated with action at these lower levels, and it is that association we see in all the vegetative and organic disturbances of function. Fantasy which is not pathologic fantasy, which ultimately results in action of a constructive kind, of course, always and necessarily precedes logical thought. Nothing that man ever accomplishes is accomplished without preceding fantasy of some sort or other. In those cases where it is not at all constructive it is very disturbing to the general make-up of the individual. "Childish solutions were the result only when we were confronted with unduly complex or new situations." I would say that was not a fair statement of the situation because unduly complex or new situations would mean a different thing to every one of us. Frequently more primitive desires issue when we think a situation is unduly complex. And of course that again is expressed in psychoanalytic terminology to the effect that the particular type of action has relation to the particular point of fixation at which difficulty arises. Dr. Sullivan has said that these obsessions do not refer to frames of reference. I would criticize that again: I would say they do refer to frames of

reference, only the frames of reference in the cases of obsessions are unconscious, rather than conscious. Now with regard to the prepotent word "bad" or "good," or what not, in referring to an object or in referring to a stimulus situation—it seems to me they do refer to objects and stimulus situations and again the objects are unconscious. For example, the "bad" and the "good" that the Doctor referred to receive their tremendous prepotent value, I take it, from his illustrations, because of the ego make-up of the schizophrenic patient, and that is based on the various identifications which that individual has had in the course of his life, and so good or bad may result as an identification with the loved mother or father, as the case may be, and then stand out as a thing in itself rather than a consciously appreciated identification from which we have the phenomena which psychoanalysis refers to as displacement, which we see over and over again in all sorts of ways. As an easily understood illustration, I mention the miser whose interest is displaced to money rather than the things the money will do for him.

But I take it that this effort of the Doctor's is a very important one. It undertakes to unravel profound and infinitely complex situations. It undertakes to attack the situations not only from the point of view of the ordinary technical methods of psychoanalysis, but tries to peer into the prenatal period and see how these various things later on acquit themselves. I am entirely in sympathy with it. I like to feel his efforts might ultimately work themselves out into forms of expressions and formulations, the object of which I hope will be this: that we will have a real biological descriptive and interpretative account of the human psyche to deal with, so that we can understand our patients on the basis of such a descriptive and interpretative account very much as we have such an account of the physical make-up of the body. And this is exactly what Dr. Sullivan is trying to do: he is trying to add his contribution to such a biological understanding.

Dr. Hickling: I have refrained because my remarks might be taken as disagreeing with Dr. Sullivan; Dr. White has helped me. In the first place, Dr. Sullivan in his paper is using his own ingenious and resourceful mind to explain that which the patient gives us. I have in my daily work, of course, found that it didn't require me to use my mind, but if I could get to use the patient's mind the patient would be able to solve the problem for me so that my line of work has been entirely to use the patient's mind and not my own. Again, in these fantasies which occur so frequently. To attempt to help or to understand the fantasy is most difficult. It is sometimes like trying to handle the smoke from a fire. And Dr. White has very kindly said that while fantasies exist sometimes as a constructive thing, again we realize they are most dangerous—that brings me back to a rule of mine, that any mental process which does not lead to an appropriate action is harmful. But if the analysis of a patient is properly handled he will tell us and show us very clearly why this fantasy and what it means. Of course we all know that words mean nothing. The value of a word to a patient is due to the affect which

goes with it in the mind of the patient; when the affect or feeling tone that goes with it becomes repugnant to a personality then they want to get rid of it and they use the various mental mechanisms, and the explanation is not in the fantasy but is in the repression.

Dr. Sullivan (in closing): With my pleasure in the excellent discussion which my paper has brought I also have to appreciate that the meeting has been considerably prolonged. I shall have to show this by skipping many of the good points brought out and picking out one here and there. Dr. Gilles' remarks are very much in point, of course. There are innumerable interesting things about this totemistic name business and the secret names of God that appeared in both the Egyptian and Jewish religions among others. I hope ultimately to touch somewhere on that. And I will agree entirely with Dr. Cassity as to the importance of morphologic factors. As to weaving "all-embracing general ideas," there again I am taught to have contempt for words, because I can conceive none of my acquaintances who is less open to that attack than I. I might add that I do not offer the ontogenetic hypothesis as fact or opinion—I find it a very interesting hypothesis in explaining certain abnormalities. The oral complex is an element of striking importance in it, only. And I have already emphasized the relation of various other things; for example, the particular relationship of unduly early interest in the fecal elimination in reporting my study of three epileptics. The ontogenetic hypothesis might be attacked as a very dubious guess, but it is not an "all-embracing idea." And I am not a philosopher in spite of his accusation.

Dr. Hall's remark that the outbreak of schizophrenia might represent a revaluation of factors in the personality is an ultra-important slant on schizophrenia and one that I am trying to formulate.

As to the occurrence of the oral complex in the absence of nursing. Purely speculatively, I cannot conceive of a situation in which the oral complex in adolescents and adults could be other than one of the major trends of personality. I do think that the overweening importance of these personality development trends are very largely established by the fact that the oral zone functions so early and eternally as channel for the satisfaction of chemical needs. As to that, it would be an intensely interesting experiment to avoid any utilization of the mouth, etc., for nourishment and to provide it by intravenous or rectal methods, and to observe differences in the evolution of personality. I am now chasing a grant of funds for research; for instance, taking two or three of the new-born children from an organization that handles illegitimate births and growing them under very strict control. Much greater than the great difficulty of finding funds is the problem of getting technically able people to do the work. There is so much superstition in all of us in our attitude toward the rearing of infants that it is a real problem to secure nurses and attendants capable of being trained to handle them in a purely scientific fashion.

If I had words—life has brought me much more of critical ability

than of ability to praise—I would certainly use them to express my appreciation of Dr. White's discussion.

I do lack entire sympathy with the psychoanalytic doctrines in that I believe certain of those formulations are unduly complex and not the simplest hypothesis; that these can be replaced by a simpler and more comprehensive theory of symbols if we but get enough data; this without any suggestion that they are not useful.

On the subject of the justification of a scientific hypothesis—What is that justification? In the practical world, for example, when you are building electrical plants, it is found in the ability to accurate prediction of facts. In the world of psychology and psychopathology we unfortunately do not know what the facts are. And the justification of an hypothesis seems to be an improvement in the technique of observing, so that we may come nearer to and finally obtain facts. It is an aid in bringing us to a coherent planful study of what makes up the life-process of the individual; that is the justification for the efforts I have made in that direction. As to my use of labels which complicate the situation, beyond doubt that is true. I don't, of course, personally think so—I think I go to all sorts of effort to express myself exactly. But one must be governed by observation as well as introspection. Dr. White's description of the complex is very well put and beautifully illustrative of what I am driving at: in his expression "peculiarities of personality make-up of the individual"; because of peculiarities the result of my experience I go to all sorts of lengths to avoid what I conceive to be uncertainty of meaning in regard to "personality make-up." That some of these things are laid down to an extent in structure in the growth during infancy is, I think, beyond doubt true. I am very sure that the actual character of symbols is to an extent rigidly determined by the receptor function, the basis of which and probably of the differentiations of such functions are laid down in structure. But that symbols themselves are laid down in structure, that is out of my field.

The next point was the first negative contact with reality in regard to denial of the nipple. The use of "dexterities" in place of "techniques" would have been an improvement. The notion of thought as arrested action is of course very close to mine. The question of fantasy and my statement to the effect that fantasy is the activity of symbols rather than of the organism; I accept Dr. White's correction in that my idea differs from his in no way. I made an erroneous use of "activity"; I meant that fantasy was the activity of symbols rather than activity in behavior. I was thinking when I wrote "activity" of "total activity." There are probably very definite somatic concomitants in all fantasy. I share with certain people a suspicion that things go on "in the mind" before the organic resonance occurs, rather than somatic phenomena preceding "psychical." The working out of the somatic resonance to emotions is progressing a little, but that is as nothing to the somatic resonance in toto. Shaw Bolton, for instance, makes the statement that we know that all thinking is accompanied by alterations in the respiratory apparatus. I have been trying to think how to prove that statement or to disprove

it. But this business of working out the somatic resonance of what goes on "in the mind" is a tremendously interesting field of scientific research.

As to unconscious situations—there the whole thing I think is difference in terms. The question of fixation is one of my tender points. I think that there is a perfectly good basis for the doctrine of fixation, but I think the doctrine of fixation is somewhat dubious. I do not sympathize, chiefly because of the schizophrenic phenomena that I have seen, where behavior and fragments of content would seem to require a whole series of fixations, when the regression progresses. It seems therefore that the whole thing needs some different formulation.

The question of identification is a thing that I hope some day to get to. Displacement is a dynamism now occupying me.

I find Dr. Hickling's views not very far from mine. I have many notes but I do not want to touch more than the high spots. I don't feel that any criticism has been applied to me to-night. As to this business of helping the patient think, I am sure that is a good notion both in theory and in practice. I would say in closing that while the whole consideration about therapeutics is premature in discussing this paper, I can emphasize the fact that the patient often tells me just what is the matter with him; the devil of it is, leading the patient to see what he lets me see.

CURRENT LITERATURE

I. VEGETATIVE NEUROLOGY.

2. ENDOCRINOPATHIES.

Simpson, Sutherland. THE EFFECTS OF THYROIDECTOMY IN THE SHEEP.
[N. Y. State J. Med., Vol. XXIII, Dec.]

In experimental thyroidectomy the sheep is a very suitable animal for several reasons. The external parathyroids located at some distance from the thyroids need not be injured nor their blood supply interfered with at the operation; it is an animal of suitable size and the "clinical" effects can be studied without difficulty; its tissues are not easily infected; in testing intelligence by the maze-running method the flock instinct is strong and forms an incentive which does not vary; twins of the same sex are not uncommon so that one can be thyroidectomized and the other kept as a control. When the thyroid is removed at the age of three weeks or a month body growth is greatly retarded so that in some cases when the adult stage is reached the control twin may be almost three times the weight of the thyroidectomized. The body temperature is subnormal and more variable than in the normal twin indicating defective heat regulation. Symptoms referable to the nervous system are among the earliest evidences of thyroid deficiency in the sheep. The cretinoid twin presents a dull and stupid appearance, is unresponsive and indifferent to its environment and seems disinclined to make any effort. This aspect of the condition is being studied by Dr. H. S. Liddell. Muscular power is greatly diminished and the loss of tonicity of the plane muscle of the intestine is one factor, and probably the most important one, in the cause of the constipation which is generally found. In all the cretinoid animals which survived the operation a year or more Goldberg, who made the autopsies, reports cardiovascular changes which at the age of two years are very pronounced. On two occasions a ram found access to the flock and several of the cretinoid animals became pregnant, but in every case the fetuses died in utero at different stages of gestation, or the lamb, if born alive, did not survive its birth more than a few hours. In many cases, probably on account of the atonic condition of the uterus, parturition was greatly prolonged and the lamb had to be removed by artificial means. Blood determinations made by Bodansky show that the sugar content is below the normal for the sheep in almost all cases. Skeletal changes are also pronounced. Finally it may be stated that in the sheep the effects of removal of the thyroid gland at an early age very closely resemble those

associated with the hypothyroid state in man and as this condition can be produced in the lamb unaccompanied by parathyroid deficiency better probably than in any other animal of suitable size available for laboratory examination, a good opportunity is offered for the experimental investigation of the functions of the thyroid gland. [Author's abstract.]

Lissner, Henry H. HYPERTHYROIDISM: A NEW CLINICAL SIGN. [Endocrinology, May, Vol. VII.]

From a careful routine examination of all patients who came under observation during a period of about a year, the author discovered an objective symptom which he considers of special clinical significance in cases of hyperthyroidism. A hissing bruit over the inferior thyroid artery, unlike the murmur heard over the gland itself when it is visibly or palpably enlarged, is new and distinctive of hyperthyroidism. It may be present when the gland is neither visually nor palpably enlarged. The sound is heard more frequently on the right side, but is present on both sides where there is evidence of thyreotoxicosis. It is not transmitted to any of the other blood vessels of the neck or superficial vessels of the trunk or extremities, nor has it been heard over the superior thyroid vessels. It is increased by deep inspiration and is not lost during expiration; is systolic in time and is lost during the rest period in the cardiac cycle. A palpable thrill in the cubital artery may or may not accompany the bruit. The author emphasizes the fact that the bruit was heard only in those cases in which the subjective symptoms checked with the objective signs and justified a diagnosis of hyperthyroidism. The exciting causes of hyperfunction of the thyroid in the cases studied may be classified as: (1) Mental strain; (2) Puberty; (3) Tuberculosis; (4) Pregnancy; (5) Excessive intercourse; (6) Toxic conditions, *i.e.*, septic tonsils.

Besides the local effect on the gland itself, an increase of circulating thyroxin must exert a constitutional effect upon the arterial system, more or less lasting in character. This thought is suggested by the pounding pulsations of all the superficial blood vessels in thyroid hyperfunction, coupled with a palpable increase in the thickness of the vessels and a rise of blood pressure. Assuming the toxic origin of the changes in the blood vessels to be true, two pertinent questions come to mind: (1) Is there an analogous condition of the blood vessels in which similar murmurs are heard? A case of arteriovenous aneurysm, in which the hissing murmur was present in practically all of the blood vessels, is cited. (2) Can the murmur be produced by reaching the physiological limit of thyroid medication in hypothyroidism? Two such cases demonstrate that with the physiological development of the hyperthyroid state, the hissing bruit develops as part of the clinical syndrome. From his studies the author makes the following conclusions: (1) The hissing murmur in the inferior thyroid artery is associated with toxic hyper-

thyroidism. (2) There are pathological changes found for the most part in the systemic arteries, due to circulating thyroxin when present for an extended period of time. [Author's abstract.]

Josephson, E. M. MYXEDEMA OF THE LARYNX. [J. A. M. A., Jan. 12, Vol. LXXXII.]

This woman, aged forty-two, complained of orthopnea and a choking sensation in the throat, especially marked when lying flat on the back. The illness dated back to 1913; since then the patient has had a thick voice and had been afflicted with intermittent hoarseness, unaccompanied by cough, which is especially marked in wet weather. Laryngoscopic examination was rendered difficult by an extremely enlarged tongue that filled both mouth and pharynx. Below a large, well developed epiglottis was a mass of tissue springing, apparently, from the posterior wall of the larynx and the interarytenoid space, shutting off the view of the lower structures. This mass was deep red, and seemed to be ulcerated. Thyroid therapy was resolved on; progressively increased doses were given, beginning with one-half grain (0.0324 gm.) of the dried gland once a day, up to 2 grains (0.13 gm.) of the extract three times a day. Within two weeks, the symptoms complained of disappeared completely. Laryngoscopic examination now showed a very large larynx, supermasculine in its proportions, set deep in the throat. Under continued thyroid therapy the tissue of walls and prolapsed ventricle dwindled, leaving a spacious glottis and supraglottic regions. An interesting phase of the treatment was the steady improvement in volume of the voice, parallel to the diminution in size of the tongue, and in its pitch and timbre parallel to the laryngeal improvement.

Rowe, A. H. METABOLISM IN THYROID DISEASE. [Endocrinology, March, Vol. VII.]

A paper tending to show some fundamental correlations between so-called basal metabolism and functional thyroid variation. As a guide for medical, surgical, or roentgen-ray treatment in hyperthyroidism, the metabolic rate, he argues, is indispensable. As a means of determining the advisability of thyroid treatment in cases of obesity and in hypothyroid states, as well as regulating the amount of thyroid given, indirect calorimetry has given an invaluable guide.

Wagner-Jauregg, J. TREATMENT AND PROPHYLAXIS OF SIMPLE GOITER. [Wien. klin. Woch., Vol. LXXIII, Feb. 22. J. A. M. A.]

Wagner-Jauregg observed four children treated for goiter by adding from 4 to 8 mg. of potassium iodid per kg. to the salt they consumed. All were cured. On the basis of 10 gm. salt per day for an adult, less for children, the child had received less than 0.04 mg. of potassium iodid a day. Bayard tried feeding a population of 1,200 in two Swiss villages with 0.004 gm. of potassium iodid per 1 kg. salt, with favorable results.

In one of the villages the trial was continued during a year, the dose being increased from 0.01 during the first six months, to 0.02 per 1 kg. salt during the second half of the year. The goiters which had not reacted to the small dose, disappeared after the large, without unfavorable consequences. This iodized salt is prepared by spreading 400 kg. of salt from the Rhine fields in a shallow receptacle and shoveling it, while 200 c.c. of a 1 per cent solution of potassium iodid is sprayed on it from an apparatus. Hé predicts that cretinism will disappear.

Harries, D. J. INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND. [Brit. Med. Jl., March 31, 1923.]

This paper concludes as follows: (1) Exophthalmic goiter is due to the excessive absorption of tryptophan from the intestine; this in turn is traceable to the absence of the indole producers from the intestine. (2) The absence of the indican from the urine indicates the absence of indole producers from the intestine. (3) In exophthalmic goiter the early disappearance of indican from the urine is of serious prognostic importance. (4) Operative surgery has a definite place in the treatment of exophthalmic goiter. Medically, much can be done by suitable dietetic measures. (5) Diffuse parenchymatous goiter is characterized by an excess of indican in the urine, suggesting an excessive destruction of tryptophan. If this excess gives place to a diminution or complete disappearance of indican, that suggests that the case is assuming the exophthalmic form. (6) Myxedema is due to atrophic changes in the thyroid gland, which loses its capacity for dealing with the circulating, tryptophan, whether that substance be excessive, deficient, or normal in amount. The disease is thus compatible with the presence or absence of urinary indican.

Bram, I. ATYPICAL EXOPHTHALMIC GOITER. [Ill. Med. Jl., Vol. XLVII, April.]

This exposition, more or less popular, deals with exophthalmic goiter as a chronic (rarely acute) affection, apparently due to a dysfunction of the endocrine organs and of the vegetative nervous system, characterized by increased catabolism, weakness, wasting, emotional disturbances, and frequently by a varying degree of exophthalmos and thyroid swelling. From this definition it can be seen that (1) the constant evidences of the clinical picture are plus basal metabolism, weakness, wasting emotional disturbances, afebrile heart hurry, tremor, and dermatographia; and (2) the inconstant evidences are exophthalmos and goiter.

Breitner, B. EFFECT OF IODINE UPON THE THYROID GLAND. [Wien. klin. Woch., Vol. LXXIII, Aug. 23.]

The colloid should be considered as a stored secretion of the thyroid gland, that it is activated by iodine according to the needs and given up to the general circulation. In hyperemic goiters the delivery of the stored secretion is accelerated by medication with iodine, but in parenchy-

matous goiters, on the other hand, it is inhibited. The differences observed in the effect of the iodine in exophthalmic goiter may be ascribed to a different etiological factor of the goiter. The inhibition of the secretion is responsible for the favorable action in certain forms of exophthalmic goiter, which are due to hyperthyroidism.

Pemberton, J. de J. MORTALITY IN SURGERY OF EXOPHTHALMIC GOITER. [Surg., Gynec. and Obst., XXXVI, 458-462.]

The results of present-day surgical management of exophthalmic goiter compare favorably with those of any surgical procedure of equal magnitude. In the Mayo Clinic during the year 1922, 1,093 operations were performed for exophthalmic goiter with eleven deaths, a mortality by case of 1.73 per cent, and by operation, of 1.005 per cent. In each instance the clinical diagnosis was accurately checked by the estimation of the basal metabolic rate, and by the pathologist's diagnosis, thus minimizing the possibility of error in classification.

The causes of death following operation on patients with exophthalmic goiter may be conveniently divided into three groups: (1) death as a direct result of the disease or the effects of the disease; (2) death as a direct result of an accident, and (3) death as the joint result of the disease and an accident.

Group 1.—The rôle played by the disease itself as the direct cause of death following operation may be considered under two headings: acute exacerbation of hyperthyroidism or dysthyroidism induced by a normal operative procedure, and visceral degenerative changes incident to the long-continued hyperthyroidism. Acute exacerbation of hyperthyroidism may be induced by the effects of the surgical procedure, by an inter-current disease, trauma, or shock, or it may be spontaneous at any time during the course of the disease. By means of preliminary treatments through the coöperative efforts of the internist, the laboratory and the surgeon, the condition of the patient in most instances can be so greatly improved that the danger of post-operative thyroid crisis is reduced to a minimum.

Between 30 and 40 per cent of the patients with exophthalmic goiter have only a mild degree of hyperthyroidism and are in suitable condition for operation on admission to the clinic; about 30 per cent can be so markedly improved in from ten to fourteen days under medical management, consisting of rest, adequate diet and fluids, digitalis as required, and the judicious administration of iodids (Lugol's solution) that the patients become safe risks for primary thyroidectomy; but for the remaining 30 to 40 per cent preliminary surgical measures, such as ligations and injections, are often necessary. The visceral degenerative changes resulting from long continued hyperthyroidism are, unfortunately, only partially remediable.

Group 2.—The accidents responsible for death following operation

on the thyroid gland are similar to the accidents following other operations. They may be divided into those avoidable and those unavoidable, and include hemorrhage, obstructive dyspnea, tetany, pulmonary infection, air embolism, pulmonary embolism, infections and intercurrent diseases. Obstructive dyspnea is usually caused by paralysis of one or both of the vocal cords, as a result of injury to the recurrent laryngeal nerve, but may be caused by partial occlusion of the trachea from pressure of forceps, or from substernal or retrotracheal adenoma, post-operative hemorrhage and infection, and surgical rotation of the trachea. It is avoidable in 90 per cent of cases. Tetany is rare and most often follows operation for recurrent goiter, when the second operation consists in a too liberal resection of the remaining lobe. In no instance in this series has tetany been an associated complication in the operative mortality. The incidence of pulmonary infection can be materially reduced by avoidance of prolonged general anesthesia, of prolonged surgical trauma, and of injury to the recurrent laryngeal nerve. When an unrecognized opening in a large vein has resulted from tearing, or from the loosening of a clamp or ligature, conditions are ideal for the entrance of sufficient air into the circulation to produce death. To avoid this, the thyroid veins should be tied as they are divided, and at the conclusion of the operation, before the wound is closed, the patient should be made to strain, as by coughing, in order to detect the presence of an insecurely tied vein.

Group 3.—Often death following operation may be caused by the disease and some exciting or contributing factor, other than the effects of a normal operative procedure. In cases of exophthalmic goiter the margin of safety is so small that any added tax on the organism may completely alter the operative result; therefore extreme care in the details of surgical management is paramount. [Author's abstract.]

Bolt, W. MITOCHONDRIA CONTENT OF THYROID AS INDEX TO ACTIVITY OF GLAND. [Jl. Lab. and Clin. Med., Vol. IX, June.]

A number of thyroids were examined by Bolt for mitochondria. The method employed was practically the same as Cowdry's modification of the Altman-Bensley stain. In cases of exophthalmic goiter the mitochondria were found to be largely and uniformly increased, the cytoplasm being infiltrated by a dense mass of small red granules. The adenomas also showed a marked increase in mitochondria, but not uniformly so, as in the exophthalmic cases, the increase being more marked in some areas, giving the section a mottled appearance. The colloid goiters, however, were the most striking. In these cases with toxic symptoms, the examination for mitochondria may reveal changes otherwise undetected. Although in most of the cases studied there was some hyperplasia, yet in some the amount was very small and in none could any sign of it be detected, yet in all the cases examined the mitochondria were markedly and generally increased.

Harris, I. PULSE PRESSURE IN EXOPHTHALMIC GOITER. [Brit. Med. J., April 14, 1923.]

Pulse pressure varying from 40 to 80 were the findings in 12 cases reported upon. The lowest diastolic pressure was 50; the highest diastolic 95; the lowest systolic 120; the highest systolic 170. Increase in pulse rate and high pulse pressure is characteristic of this disturbance [judged from 12 cases].

Marinesco. DEFENSE AGAINST INFECTIONS IN HYPOTHYROIDISM. [Bull. l'Acad. Méd., Vol. XCIII, May 27. J. A. M. A.]

Marinesco reports two cases of congenital myxedema in which lack of the natural defenses, through deficiency of the thyroid gland, caused death from a succession of infectious diseases. He explains that the gland acts on the metabolism of the organs which produce the defensive antibodies, and the lack of or disturbance in thyroid function affects the nutrition of these organs and consequently decreases the resistance of the organism to infections.

Sudeck. IODINE TREATMENT IN DISEASES OF THE THYROID GLAND. [Klin. Woch., Vol. II, June 11.]

Sudeck gives a review of the iodine treatment in its various forms in diseases of the thyroid gland. Iodine is found in albuminous combination stored up in the colloid substance of the thyroid gland (iodothylin). Kendall has isolated its active principle, thyroxin. Taken by the mouth thyroxin has the full action of the internal secretion of the thyroid gland, and in deficiency of this secretion it is a complete substitute for it. The author records operative cases showing that after removal of the thyroid gland, preparations of thyroid gland substance completely took the place of the lost gland functions. Iodine is normally introduced into the system in food and air, but in extremely minute quantities. Iodine given medicinally in great quantities may lead to hyperthyroidism, or 'Graves' disease, in certain unknown conditions. In all forms of hypothyroidism—myxedema, cachexia, strumipriva, aplasia of the gland, etc., excellent results are obtained by thyroid preparations. In hyperthyroidism and Graves' disease treatment with iodothylin or iodine is strongly contraindicated. In goiter the iodine albumin metabolism is deranged, and the thyroid hyperplastic enlargement is to be regarded as a compensatory reaction. Iodine is only indicated when the goiter contains functional gland tissue, and only in diffuse hyperplastic goiters. When the goiter consists chiefly of degenerated tissue (fibrous, gelatinous, calcareous, or fatty) or of separate adenomatous masses or cysts, iodine treatment fails. Large doses of iodine are to be avoided. The dose should be measured in milligrams or decimilligrams. Kocher gives 1 to 3 dmgs. daily for three or four weeks, and repeats after pauses of several months. Kimball gives 0.2 mg. of sodium iodide in young patients twice in the year for ten

days. Iodine tablets have been given to school children, and iodine added to cooking salt in districts where goiter is prevalent, and successful results have been recorded.

Langemak. TREATMENT OF GOITER WITH ULTRAVIOLET RAYS. [*Deut. Zeits. f. Chir.*, Vol. CLXXXV, March 5.]

An inquiry into the alleged results of the use of the ultraviolet ray treatment in 128 cases of goiter, with or without local or internal iodine treatment or phosphorus treatment. Not a trace of the goiter could be found on reëxamination in 74.3 per cent, and in the others only the closest scrutiny showed any traces of it.

Pajzs, P. A METHOD OF TREATING EXOPHTHALMIC GOITER. [*Zeit. f. Chir.*, Vol. CLXXXV, March 24.]

Another empirically cured treatment by this author consists in injecting alcohol into the diffuse parenchymatous goiter tissue. The injections are repeated until the pathologic secretion of the goiter is sufficiently reduced, which fact is measured by the general condition of the patient. At first, from 1 to 2 c.c. of 80 per cent alcohol is injected—if possible, deep within the parenchyma, on one side. The first injections cause a marked general reaction. The tachycardia is increased temporarily; frequently diarrhea occurs, and the exophthalmos appears to be greater, doubtless due to the resorption of toxins liberated by the coagulating effect of the alcohol in the goiter tissue. The injections are then cautiously increased. At first alternating, then daily one or two injections on both sides, later two or three injections, of from 0.5 to 1 c.c. of alcohol are given until the desired result is obtained. If the general manifestations are increased or local inflammations (disappearing usually in one or two days) should appear, the injections are stopped and fomentations are employed. The injections are made at different points each time. In a week, a considerable diminution of the goiter will be noted. In from three to four weeks after the injections are begun, the general condition of the patient starts to improve. In some cases, from 70 to 80 injections are required to effect a cure. As little as possible of the goiter tissue should be destroyed; otherwise, thyroprival symptoms may be produced.

Widal, F., and Abrami, P. ASTHMA OF THYROID ORIGIN. [*Presse Méd.*, Vol. XXXII, May 31. J. A. M. A.]

Widal and Abrami describe four cases in which essential asthma was connected with manifestations of hyperthyroidism in exophthalmic goiter. The asthma attacks usually coincided with an emotion or the menses. The asthma was not of anaphylactic origin, as protein skin reactions, alimentary and respiratory, were negative. They recall a personal case of essential asthma associated with hypofunction of the thyroid gland in myxedema. They assume that defective endocrine functioning of a

diseased thyroid gland causes changes in the vegetative system with consecutive asthma. Under roentgen-ray treatment of the thyroid gland, both the asthma and the exophthalmic goiter syndrome subsided simultaneously. The effect seems to be permanent so far as known up to two years after the treatment.

Porter, C. A. ANALYSIS OF MY END-RESULTS IN THYROID SURGERY.
[Surg., Gynec. and Obst., XXXVI, 61. Med. Sc.]

The author analyzes all his cases that have been operated upon since 1904 with the exception of the nontoxic goiters. There were 19 cases of malignant disease of the thyroid, 4 of which were classified as sarcoma and 15 as carcinoma. A detailed history of each case is given. The age of onset of one was twenty-five, one thirty-five, and of the remainder more than forty-five years. The duration of the tumor previous to operation was under two years in five cases, five years in one case, and the remainder from six to twenty-eight years. A study of his series shows that there are two distinct types; one occurs primarily in patients beyond middle life and grows steadily or rapidly; the other arises in a tumor, probably an adenoma, of long duration and shows evidence of the onset of malignancy by more or less sudden increase in size or induration, with loss of weight and pressure symptoms. The particularly unfavorable cases are those in which the tumor is fixed to the trachea or causes paralysis by involvement of the recurrent nerve. The most favorable are the encapsulated adenomata with malignant degeneration. He believes that the most satisfactory treatment for this type of case is the radical operation, provided that an X-ray examination of the lungs is negative. Subsequent radium and intensive X-ray treatment is often of value and may postpone, if not entirely avoid, the need for tracheotomy.

The number of toxic goiters was 204, and the operative results have shown a steady improvement. The mortality, at first 15 per cent, had steadily fallen to 3 per cent. He regards this improvement as partly due to the preliminary use of X-ray treatment and quotes a series of cases in which this form of treatment used alone led to a complete cure. The operations are graded according to his judgment of the patient's condition, and may consist of preliminary ligations, hemithyroidectomy or subtotal thyroidectomy. Of the 204 cases there were 24 deaths in the hospital and 9 deaths at various periods after discharge. The deaths are divided into 4 classes: (1) Hyperthyroidism, 13 in number. (2) Pulmonary complications, which have been much more frequent than in the case of nontoxic goiters, 8. (3) Cardiac complications. (4) So-called accidental death. In addition to these deaths 24 cases were lost sight of. Of the remaining 147, 26 are too recent for analysis, thus leaving 121 cases that have been analyzed. Forty-five of these cases were not examined by himself, and the end-results are therefore based upon reports from the local physician or the patient. It is interesting to note that among this group there was

one unimproved, 3 improved but not cured, 4 cured of their hyperthyroidism but showing marked mental symptoms, and 4 showing cardiac symptoms. The remainder are cures. Of the cases examined by himself he lays special stress in determining the cure upon the nature of the basal metabolic index. Of 13 ligations 11 had such an investigation carried out, and 9 of them were within normal limits; that is to say, the metabolic rate was plus or minus 5. Of the hemithyroidectomies metabolic rate determination was carried out on 35; 32 of these showed complete cure, but although ligation and hemithyroidectomy may cure many patients, ultimate thyroidectomy most quickly and permanently reduces the metabolism to normal.

Benard, R. THYROID TREATMENT OF ECZEMA. [Bull. Soc. Méd. des Hôp., Vol. XLVIII, June 6.]

Benard's patient was a young woman who for two and a half years had been tormented with extensive itching eczema of the buttocks which had resisted all treatment. Some minor signs of thyroid deficiency finally gave the clue to effectual treatment. By the end of the second week of thyroid treatment the eczema had disappeared, and there has been no return during the two years since.

Kimball, O. P. DIFFERENTIAL DIAGNOSIS OF HYPERTHYROIDISM. [Ohio State Med. Jl., Vol. XX, July. J. A. M. A.]

Of the eighty-four cases studied by Kimball, twenty-four were found to be extremely sensitive to iodine, *i.e.*, small daily doses of iodine (10 mg. is sufficient) intensified every symptom of hyperthyroidism and the basal metabolism rate was increased. In each of these twenty-four cases operation was advised and eighteen of these patients were operated on. In each of these eighteen cases, immediate and striking results were obtained. These patients have been followed for months and in every case the results have been permanent and most gratifying. Of the six who refused operation, three have been followed closely and various methods of medical treatment have been applied. No one of these three patients has shown any permanent improvement. Among the sixty cases in which the functional test was negative, that is, who were not sensitive to iodine, nineteen were operated on. The post-operative course of these nineteen patients presents a marked contrast to that of the patients who were sensitive to iodine. In no one of these nineteen cases did any definite, satisfactory result follow the thyroidectomy. The remaining forty-one cases were treated according to the findings.

Kocher, A. TREATMENT OF HYPOTHYROIDISM BY THYROID TRANSPLANTATION. [Br. Med. Jl., Sept. 29, 1923. J. A. M. A.]

Kocher prefers to use homotransplants taken from the hypertrophic gland of a severe but recent case of exophthalmic goiter, which is in a state of cellular hypertrophy and active new formation of vesicles. The

best part of the gland to be taken is the upper pole or posterior part of the gland near the superior thyroid artery. It is essential that the pieces of gland shall be put into the receiver's body immediately after being cut out of the donor. Kocher transplants mostly into the upper end of the tibial bone, because it is very vascular and has a special affinity for thyroid tissue. However, he also transplants into the sheath between the fascia transversalis and peritoneum, or into the peritoneal cavity. But in the latter locality it is better to stitch the parietal peritoneum over the transplanted gland and not put the gland free into the peritoneal cavity. If the graft is to be successful, the healing of the wound must take place without rise of temperature or other post-operative reaction. Most important of all is the pre-operative and post-operative treatment. The patient must take thyroid some time before and several weeks after the transplantation, in order to decrease his actual want of thyroid, because if this is great, the transplanted gland tissue is simply eaten up by the organism. Failure to observe this need is the most common cause of failure of transplantation, especially in cases of total congenital absence of the gland.

Marine, Lenhart and Kimball. PREVENTION OF SIMPLE GOITER. [Collected Papers, Cleveland. B. M. J.]

That "simple goiter is the easiest of all known diseases to prevent" is the thesis of this series of twelve papers collected and edited by G. N. Stewart, director of the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University, Cleveland. The conclusion is based on more than ten years' work on comparative and experimental medicine, commencing with an investigation into the so-called thyroid carcinoma of brook trout, which was shown to be really hyperplasia or simple goiter. At one time the number of cases of this goiter among members of the salmon family artificially raised became so great that many hatching establishments were abandoned. It was then discovered that the disease could be prevented by the addition of very small quantities of iodine to the water, and this prophylactic method was afterwards employed with great success in children's schools in the region of the Great Lakes, where goiter is extremely prevalent. The amount of iodine necessary to prevent the development of simple goiter is small; two grains of sodium iodide daily for ten days in succession twice a year, in the spring and autumn, was found to be efficient as a routine, and oral administration was found to be more practical and economical than external application or inhalation (by hanging a wide-mouthed bottle of 10 per cent solution of iodine in the schoolroom). Among 2,190 pupils in the Akron public schools who were thus treated 5 showed thyroid enlargement, while out of 2,305 pupils who did not take the prophylactic 495 have shown thyroid enlargement. Out of 1,182 pupils with thyroid enlargement at the first examination who were then treated, 773 showed

diminution of the thyroid, whereas among 1,048 pupils with thyroid enlargement who did not take treatment 145 only showed diminution in the size of the thyroid. The incidence of any untoward symptoms from this treatment among 3,000 girls, many of whom took it for three years, was less than 0.5 per cent, and then was merely a mild iodide rash. The use of iodide in goiter has been thought to be dangerous and to cause exophthalmic goiter; any bad effects observed were, it is suggested, due to excessive doses of iodine. The authors hold that though the ultimate cause of simple goiter is still unknown, the immediate cause is lack of iodine. This view is thought to be supported by the observation that in hyperplasia of the thyroid iodine is always deficient. A certain minimum content of iodine is, they believe, necessary for the maintenance of the normal or colloid state of the gland, the stainable colloid varying inversely with the degree of hyperplasia and directly with the iodine content. Simple hyperplasia is prone to occur at three periods—in fetal life, in adolescence, and during pregnancy; it is approximately two to three times as frequent in girls as in boys; in the majority of boys it is congenital, and can be prevented by giving iodine to the mother during the pregnancy. Thyroid hyperplasia of congenital origin is recognizable by the persistence of thyroid tissue in the position of the thyroglossal stalk; the so-called lingual and infrahyoid thyroids have, it is believed, the same significance. Holding these views, the authors maintain that while the prevention of simple goiter in pregnancy and fetal life depends on the directions of individual medical men, the prophylaxis of goiter in adolescents is a suitable matter for public health measures. They are undoubtedly right in saying that prevention of thyroid hyperplasia is of far-reaching importance for countries where it is endemic; it would mean the control of cretinism and possibly of other forms of physical and mental degeneration; it would be reasonable also to expect a diminution of the number of thyroid adenomas, which in their turn give rise to cystic change, and probably are the antecedents of 90 per cent of malignant thyroid tumors.

Edling, Lars. THE RESULTS OBTAINED BY RÖNTGEN TREATMENT OF EXOPHTHALMIC GOITER. [Fortschr. a. d. Geb. d. Röntgenstrahlen, XXX, 117. Med. Sc.]

The value of X-ray treatment in exophthalmic goiter is variously estimated and a large number of surgeons are opposed to it, while others admit its use. The author reports on 30 cases which came under his hands, in 25 of which the symptoms were very well marked. He regards the damage to the nutritive function as the essential characteristic, *i.e.*, the emaciation and loss of strength as well as the not infrequent occurrence of glycosuria and the rise of temperature, the disorder of the vasomotor system, the rapid pulse, cardiac enlargement, diarrhea, and sweats. For him these are the symptoms of primary importance, and he is in

inclined to measure the results of the treatment by its effect upon them. He claims that of the 30 cases handled by the Röntgen method, in addition to the usual medical and hygienic treatment, 30 per cent were relieved of all symptoms; 43.3 per cent improved, and 20 per cent either showed no improvement or died, while 6.7 per cent suffered slight relapse. The great majority of the cases were substantially improved within four months of the beginning of the treatment. The coincidence of the beginning of convalescence with that of the treatment points to the latter as being the dominant cause of the improvement. The Röntgen treatment, compared with that by operation, yielded practically equally good results. The actual number of cures by operation is decidedly greater, and the cure is generally more complete than by the Röntgen method. The results are obtained more quickly, but surgical interference is associated with the danger of post-operation death from the disease, and this may occur not only in the very grave, but also in the less serious cases, and about 10 per cent of those operated upon die. X-ray treatment fails in about 20 per cent of the cases, and generally in those of the grave type. The causes of failure are not satisfactorily explained either by the general clinical characters of the case, by heart complications of any kind, or by social conditions, by a previously chronic course of the disease, or by variations in the radiation technique employed. They appear rather to be governed by, at present, unknown conditions which are probably to be attributed to insufficient pathological knowledge, and also to the rather vague demarcation of the disease. Measurement of disturbance of the nutrition gives us a far more certain means of diagnosis in the most characteristic types of the malady, than any previously in use, and enables the results of the Röntgen treatment to be controlled with almost mathematical precision. At the same time it affords a means of obtaining information as to the progress of an individual case at any stage.

Wahlberg, J. IODIN TREATMENT OF HYPERTHYROIDISM. [Finska Läk. Hand., Jun, 1924. J. A. M. A.]

Wahlberg's treatment differs from the usual technics in that he uses only minute doses, never more than 0.04 gm. of potassium iodid. He gave at most 15 drops a day of a 1 : 20 solution, and all his nine patients thus treated materially improved and five can be regarded as cured. In the others, the improvement was transient, and in some the condition was graver at the close of treatment than before. He ascribes this to cumulation from too long continuance of the optimal dose.

King, John T., Jr. THE GAS EXCHANGE IN DISEASES OF THE THYROID GLAND. [Bulletin of the Johns Hopkins Hospital, 36, September.]

King analyzed a series of forty-eight one hour periods, the observations being made on patients with thyroid disease in the basal condition, with the following results: The average CO_2 elevation is 0.8 per cent less than the elevation of direct calories, and there is an average error in

correlation with direct calories from hour to hour of ± 5.2 per cent. The average elevation of indirect calories is 2.1 per cent above direct calories for those experiments. The error in the correlation of direct and indirect calorimetry from hour to hour is ± 5.8 per cent. The average elevation of O_2 is 6.5 per cent above the direct calories, and the average error in correlation from hour to hour is ± 5.8 per cent. The average gaseous ratio is 0.791 in the first hour and 0.796 in the second. In the third hour it is 0.767. In observations on quiet patients the gaseous ratio falls in the second hour in eleven cases and rises in sixteen. In restless patients it falls in five cases and rises in six. The conclusion is reached that CO_2 elimination affords the best index to the heat production in thyroid disease, as judged by direct calorimeter experiments.

Tarnanceanu. GOETSCH'S TEST AND RADIOTHERAPY IN AFFECTIONS OF THE THYROID GLAND. [J. de radiol. et d'électrol., VI, 501.]

The author states that, although the amelioration of symptoms indicates that the treatment is of use, there is nothing to guide the radiologist as to when to stop treatment: there is no biological reaction to go by. With a view to this the author has used the test originated by Goetsch in 1918. Goetsch concluded that hyperthyroidism is accompanied by a hypersensitiveness of the organism to adrenalin, and that this hypersensitiveness is proportional to the degree of hyperthyroidism.

Technique of the test. This is described in detail. A positive result is accompanied by (1) increased pulse rate, (2) increased arterial tension, (3) marked subjective symptoms. The absence of appreciable symptoms after the injection is a negative result. According to the author, the tachycardia and subjective symptoms are the most marked in the positive reactions. The test has been applied to all cases in which radiological treatment to the thyroid has been indicated. The observations are grouped into four classes: (1) True cases of Basedow's disease with a positive Goetsch before treatment, and a feeble positive or a negative after treatment which did good. (2) Cases which improved with treatment, but had a relapse with a positive Goetsch. (3) Observations on cases during treatment in which the test was negative. (4) Observations on cases before treatment in which the test was negative.

Class 1. A case with a marked positive reaction is described in detail with the treatment given, and the effect of the test after treatment; this was completely negative. *Class 2.* Two cases are described in which improvement followed treatment, with a relapse when it was discontinued; in both the test was positive. *Class 3.* One case is described in which the negative reaction indicated that treatment should be stopped. *Class 4.* Three cases are described in which no treatment was given, and one in which seven séances produced no benefit. By means of the test cases in this class the practitioner can avoid wasting time in treatment that will be useless.

Conclusions: (1) Goetsch's test indicates a state of hyper- or hypo-functioning of the thyroid. (2) It enables radiologists to choose those cases which will benefit by radiotherapy, and to advise other treatment for cases which will not. (3) It forms a biological reaction by which the radiologist can determine when to stop treatment. (4) After treatment, periodical tests indicate the slightest relapse and the need for renewed treatment.

II. SENSORI-MOTOR NEUROLOGY.

5. PEDUNCLES; MIDBRAIN.

Wimmer. STRIATAL SYNDROMES WITH CONGENITAL BRAIN DISEASE. IV. [Hospitalstidende, Oct. 1, 1924.]

A further contribution from this gifted Danish neuropsychiatrist. This is a history of a case of pallidal rigidity, with certain elements of Little's disease, in a boy of nineteen. There were no signs of pyramidal disease, the symptoms being exclusively of the striatal type. In a second case, the congenital striatal symptoms were restricted to the right side.

Teige, K. PARALYSIS AGITANS AND WILSON'S DISEASE. [Cas. lek. ceskzch., Jan. 17, 1925.]

This paper reverts to the older naïve Lundborg conception that the pathogenesis of paralysis agitans may be found in a dysfunction of the parathyroids, causing an overproduction of guanidin. In progressive lenticular degeneration, the overproduction of guanidin might be due to an increase of ammonia which inhibits deamidization. The primary cause of the ammoniemia might be the affection of the liver.

Pineas, Hermann. CLINICAL AND ANATOMICAL FINDINGS IN A CASE OF CO POISONING. [Ztschr. f. d. ges. Neurol. u. Psych., Vol. XCIII.]

Clinically the patient revealed after thirty days a psychomotor apraxia in Kleist's sense. Anatomically there were lacunae in both putamina beside symmetrical softening of the globus pallidus. The author concludes that the psychomotor akinesis, also the mixed akinetic-hyperkinetic picture, must be due to bilateral disease of the stem ganglia, just as Kleist has explained it in the case of psychomotor hyperkinesis.

Nayrac, P. CASE OF PROGRESSIVE LENTICULAR DEGENERATION. [Revue Neurologique, Vol. XXXI, August.]

This paper discusses the relation of the hepatic changes to the interruption of integrative mechanisms in the lenticular nucleus, an idea suggested early by Jelliffe. Contrary to the toxic and more or less orthodox conception, first advanced by Wilson, he assumes that the cirrhosis of the liver is not the primary lesion in Wilson's disease, but that the brain is first affected. Changes in the tuber cinereum, which is supposed to

take an important part in the metabolism of fats and carbohydrates, may induce consecutively functional and organic disturbances in the liver.

Warkany, J. COMPARATIVE ANATOMICAL INVESTIGATIONS ON THE CONNECTIONS BETWEEN GLOBUS PALLIDUS AND SUBSTANTIA NIGRA. [Arb. a. d. Neurol. Inst. Wien., XXV, 195; Med. Sc.]

With the exception of *Macropus* and *Cavia*, investigations carried out on a considerable number of superior vertebrates, man included, failed to reveal any anatomical connection between globus pallidus and substantia nigra. Strands of nerve cells were instead noticed between globus pallidus and the nuclei of the tuber cinereum (Nucleus paraventricularis and Nuclei tuberosi). But without further embryological investigations even this observation seems insufficient for considering the globus pallidus as a part of the midbrain. [C. da Fano.]

Castex, M. R., et al. PARALYSIS AGITANS. [Prensa Méd. Argen., Feb. 20, Vol. XI.]

This paper presents a pathological study of a typical case of Parkinson's disease. The lesions as revealed by a large number of photomicrographs were not confined to the lenticular nucleus but were found also in the putamen and caudate nucleus.

Lesué, E., and Richet, C., Jr. THALAMUS AND STRIATE BODY IN INFANTS. [Presse Méd., Vol. XXXIII, Jan. 7. J. A. M. A.]

While Virchow insisted that the spinal cord, the seat of reflex action, is the only active part of the nervous system in the newly born, Collin asserts that the activity of the thalamus and of the striate body is manifest also even in the first days of life. The functioning is revealed by rhythmic movements of the arms and legs, which may be noted till the sixth or seventh month.

La Torre, M. LIVER AND STRIATAL SYNDROMES. [Policlinico, Oct. 6, Vol. XXXI.]

A general discussion of the liver changes which had been considered pathognomonic of Wilson's disease and which, following earlier reports, he has found also in Westphal-Strümpell's pseudosclerosis, in torsion spasm, and even in postencephalitic parkinsonian conditions. All these affections of the striate body may have a common pathogenesis is the conclusion which he advances.

6. ENCEPHALITIS.

Verger et Hesnard. MENTAL STATE OF BRADYKINETIC ENCEPHALITIS. [Journ. de Med. de Bord., Sept. 25, 1922.]

The mental state of bradykinetic encephalitis patients concerns not this or that particular psychical function but a poorly characterized mode

of mental functioning in its totality, *i.e.*, in the current of thought; not only is there a difficulty in movement, there is a related difficulty in thinking. These living statues, perfectly lucid habitually, do not think. Awakened revery, reflection, this internal psychical movement prodigiously active and very important since it constitutes the greater part of our mental life, with *them* is retarded or extinguished. Their voluntary attention is easily fixed on the interrogator at first, but when this is to be retained for any time so painful an effort takes place that it soon brings about the conscious loss of self-conduction. The patients have a striking consciousness of this slowness of the movement of their ideas and of this diminution of their mental spontaneity. They are obliged to will their thoughts instead of permitting them to flow. This conscious effort of begging the superior mental automatism gives to the patient the same painful impression that the willed effort makes upon the muscular automatism. The patients are apathetic; they do not respond. This emotional retardation, a sort of bradythymia, being often progressive, they arrive at such a stage as to no longer observe what is going on about them and capitulate entirely before the effort to think. After many months of this lucid stupor some of the patients develop a real state of dementia figé. [Author's abstract.]

Silvestri, T. POSTENCEPHALITIC PARKINSONISM. [Policlinico, Vol. XXIX, No. 22, p. 721.]

Two cases showing bradykinesia are reported. A girl of thirteen and a young man showed the motor difficulties except when dancing or bicycling.

Dunnington, J. H. PARALYSIS OF DIVERGENCE WITH REPORT OF THREE CASES DUE TO EPIDEMIC ENCEPHALITIS. [Arch. Ophth., January, LII, 39.]

Parinaud presented the first clear and correct description of paralysis of divergence in 1883. Duane has taught us to recognize an homonymous diplopia and convergent strabismus of sudden onset as the cardinal symptoms. This diplopia is peculiar in that it is greatest at a distance of twenty feet or more and diminishes as the eyes are approached. The separation of the images remains the same in all the directions of gaze as long as the distance between the test object and the patient is constant. The convergent strabismus behaves in exactly the same manner as the diplopia, *i.e.*, it is greatest at a distance. Measurement of the deviation shows a marked esotropia at twenty feet and only a slight esophoria at thirteen inches. Such patients have binocular single vision at the reading distance but a distressing diplopia beyond this range. There is no limitation of motion of either eye in any field, both eyes being able to move outward in a perfectly normal manner. Diagnosis is most commonly confused with a paralysis of the external rectus, either unilateral or bilateral, but the characteristic feature of a diplopia due to an individual

muscle paralysis is its variation in amount in the different directions of gaze. An accurate diplopia plotting, the fields being mapped out on a Duane tangent screen at a distance of thirty inches, is of the greatest aid in diagnosis. Spasm of convergence may be confused with paralysis of divergence; if the diplopia is due to an excess of convergence it increases as the test object is brought nearer to the eyes and is negligible at a distance of twenty feet, which is the reverse of what happens in paralysis of divergence. The etiologic factor remains obscure in the majority of cases; an organic brain lesion, tabes, syphilis, multiple sclerosis, lead poisoning and cerebral tumor have been recorded as causes. Dunnington gives the case histories of three patients, all under twenty-three years of age, where the condition attended or followed attacks of encephalitis. The exact location of the center of divergence is not known but is thought to be near the sixth nerve nuclei. Treatment must be symptomatic and causal. [Author's abstract.]

Moren, John J. PARALYSIS AGITANS AS A SEQUEL OF ENCEPHALITIS.
CASE REPORT. [Kentucky Medical Journal, September, 1922.]

I would like to report a case history received by me yesterday. It represents something unusual to me and quite interesting. The patient, a woman, age twenty-six years, married, and has two children. In March, 1919, she had influenza, and married a short time afterward. She then had no illness of any consequence until November, 1920, when she suffered severe radiating pains about the head and neck, and had some delirium. This persisted for nearly six weeks. During December she gave birth to a child without any complications so far as I could determine. A short time after the delivery the family noticed she did everything very slowly; that is, whenever she attempted to move around her gait was extremely slow and deliberate, and oftentimes in attempting to do something which caused her to raise the hand to the level of her head her hand would stop in that position and remain there for some time. There was some improvement in her condition, and she then became pregnant the second time. It was reported by the family that after this she appeared more like herself and seemed normal. In September, 1921, she gave birth to her second child without any complications. Following this delivery her slowness of movements and speech became markedly increased. She seemed to be in worse condition than following the previous delivery. When I saw her yesterday she presented the typical picture of the paralysis agitans syndrome—attitude, facial expression, voice, etc., without tremor and negative physical findings so frequently noted following as a sequel of encephalitis. The question of course arises, did this patient have encephalitis in September, 1921. There was no history of double vision, nor did the patient have fever at any time so far as I could ascertain. Cases of this kind have been reported as having occurred during pregnancy, but the manifestations in this case followed pregnancy. During the time the woman was pregnant she seemed entirely normal. It

is the first case that has come under my personal observation with such a history. [Author's abstract.]

Ugón, A. A. CHRONIC ENCEPHALITIS. [Arch. Lat. Am. d. Ped., August, XVI, No. 8.]

Two interesting cases of prolonged encephalic syndrome with diagnostic difficulties, at one time suggestive of brain tumor in a boy and of epilepsy in his sister, aged thirteen. Later the boy died from tuberculosis. Encephalitis was present in the brain. The girl developed convulsive attacks at nine. She died four years later after continuous epileptiform attacks, advancing blindness, and mental deterioration. The explanatory analysis is not convincing.

Rosenow. EPIDEMIC HICCUP. [Ed. B. M. J.]

Following the recognition of encephalitis lethargica attention has been called, especially in France, to epidemic hiccup. Its etiology is obscure, but epidemiological and clinical data suggest that it is related to encephalitis lethargica, as it often occurs in the course of that disease; the two appear contemporaneously in the same districts, and the diaphragmatic spasm may be regarded as a manifestation or variant of the myoclonic form. Rosenow, of the Mayo Clinic, who in 1921 produced spasms of the diaphragm in monkeys and rabbits inoculated intravenously and intracerebrally with a streptococcus isolated from pus obtained from the tonsils of patients with epidemic hiccup, now carries this research farther. Intracerebral injections with dead streptococci and filtrates of cultures were found to give rise to spasm of the diaphragm, the duration of symptoms being shortest after the injection of filtrates, longer after the introduction of dead streptococci, and most persistent after the inoculation of the living organisms. The streptococcus is similar to the diplostreptococcus, which he described in 1916 in encephalitis lethargica and recently identified microscopically in or adjacent to the lesions in a series of twenty-one cases of epidemic encephalitis; it belongs to the pneumococcus-streptococcus group of organisms normally present in the upper respiratory tract. It was recovered from the experimental animals and produced spasm of the diaphragm and other muscles in further animals but symptoms of lethargic encephalitis became more frequent and diaphragmatic spasm less common with the number of animal passages; it therefore appears that the peculiar localizing power of neurotropic property of the hiccup streptococcus is acquired and perhaps a phase in the life cycle of the pneumococcus-streptococcus group of organism. The symptoms were permanently controlled by anti-encephalitis serum in an animal inoculated by a strain of streptococcus which was specifically agglutinated by the serum. The central nervous system of the animals showed perivascular infiltration, in early stages with leucocytes, later with mononuclear or plasma cells. The streptococcus produces a chemical substance, and the persistence of hiccup depends on the continued production of this substance in the central

nervous system or elsewhere. That the impulse producing the spasm is of central origin is shown by the observation that heroin, a dépressant of the respiratory center, controls the spasms. This may possibly be of service in practice, for morphine has generally been found to be the most successful of the numerous drugs tried in obstinate hiccup, and it has been stated that in epidemic hiccup nothing is effectual in stopping the paroxysms, though pressure upon the eyeballs has been said to be successful.

Rombouts, J. M. PARKINSONISM AFTER EPIDEMIC ENCEPHALITIS. [Ned. Tijds. v. Gen., Vol. LXV, Sept. 2, II, No. 10. J. A. M. A.]

Rombouts remarks that the two-day meeting of the Société de Neurologie at Paris in June, 1921, was entirely devoted to the Parkinsonian symptoms after epidemic encephalitis, and an amazing diversity in the previous course of the encephalitis was evident. In his own experience at Leiden, in some cases only the Parkinsonism first gave the clue to the nature of the malady a few weeks or months before. The Parkinsonian symptoms develop more rapidly than in paralysis agitans. Erb's recommendation of scopolamin as the best treatment for paralysis agitans seems to apply to the Parkinsonism after epidemic encephalitis. Rombouts describes his favorable experiences with this treatment in a number of cases, even when given by the mouth. Although the disease itself may not benefit, yet the patient's condition may be immeasurably improved. The drug can be given with good effect for months at a time, but always under strict supervision. He gave 0.25 mg. at a dose, in series of two or three doses.

Marie, Pierre, and Lévy, G. THE RESPIRATORY AND SLEEPLESS FORMS OF ENCEPHALITIS. [Rev. Neur., Vol. XXVIII, Oct.]

Respiratory and sleepless forms of epidemic encephalitis are discussed in this paper. Respiratory troubles have been observed by others as well as the writers and may be ranged in three categories. The first group includes disturbances affecting the respiratory rhythm namely tachypnea, bradypnea and apnea. The second group includes spasmodic cough and the third group respiratory tics and abnormal nasolaryngeal sensations. In patients with tachypnea the breathing rate may be increased to from fifty to eighty per minute. This is a most distressing condition and usually ends fatally, but sometimes occurs in recoverable paroxysms. The spasmodic cough is reminiscent of whooping cough. The respiratory tics occur most frequently as attacks of irrepressible sneezing and are specially common in children. Although lethargy is a dominant feature of epidemic encephalitis, there are instances in which it is wholly absent and its place taken by insomnia. In children specially, there may be an inversion of the sleep rhythm. They may pass night after night in a state of restless agitation and sleep during the day. Sometimes either they are late in going to sleep, or their sleep is restless and unnatural.

Mental disturbance, the acquirement of bad habits and physical decline are common accompaniments. In both the respiratory and sleepless forms there is an unfavorable tendency to chronicity.

Hall, A. J. LETHARGIC ENCEPHALITIS. [Lancet, April 14, 1923.]

Hall makes an extensive review of the clinical history, epidemiology, relation to other diseases, etc., of this disease and includes a bibliographic summary. (Later developed as a monograph.)

Marquard, K. FORMS OF POST-GRIPPE ENCEPHALITIS UNUSUAL IN LOCATION. CONTRIBUTION IN REGARD TO THE SYMPTOM OF ADIADOKINESIA. [Arch. f. Psych. u. Nervkr., Vol. LXVII, No. 1.]

The author adds a new case to those in the literature. Here middle-ear suppuration directly followed grippe and then appeared a nonsuppurative encephalitis of the right cerebellum. Simultaneously there was adiadokokinesia which extended also to the region of the facial with a marked tremor of the lip musculature though other signs of cerebellar affection were wanting. It is admitted that an encephalitis of the striatum can not be entirely excluded.

Hagelstam, J. NEUROSES FOLLOWING EPIDEMIC ENCEPHALITIS. [Fins. Läk. Hand., Jan., 1923.]

The author picks out four cases with neurotic syndromy from a melange of nearly a hundred epidemic encephalitis cases observed in 1920 and 1921. Hysteria had been assumed at first. The psychogenic character of many of the symptoms, their periodic recurrence and the benefit from psychotherapy are main features of the cases. Hagelstam calls attention further to the presence of certain symptoms which we know from other forms of encephalitis. He falsely infers the necessity for seeking an organic basis in all cases of neuroses.

Libby, G. F. EPIDEMIC ENCEPHALITIS FROM THE OPHTHALMOLOGICAL STANDPOINT. [Amer. Journ. Ophth., Vol. V, p. 785.]

Epidemic encephalitis from the point of view of the ophthalmologist is here considered. In view of the fact that the ocular symptoms are often rapid in onset and may be the first, or even the only, symptom noticed, diplopia being frequently the first indication. Of other ocular symptoms paralyzes of the eye muscles are transient and variable, and ptosis is often bilateral but seldom complete. Weakness or loss of convergence, insufficiency of accommodation, and inequality of the pupils occur, and in a large number of cases nystagmus is present, and occasionally optic neuritis in one or both eyes. If syphilis can be excluded, encephalitis may be diagnosed from the ocular symptoms alone, and an important differentiating point is the duration of the muscular palsies, the lesion in syphilis being generally long standing before treatment avails, while in encephalitis the paralysis is fleeting and may shift from

one muscle to another. Notes of five cases are given showing several varieties and degrees of ocular symptoms, from transient palsies to destructive optic neuritis. While it is possible to base a diagnosis on the ocular symptoms alone, the disease almost invariably attacks the eye that a diagnosis in the absence of such symptoms is open to doubt. The evil effects of epidemic encephalitis may affect the general nervous system for years, and consequently the eyes may show persistent, or even permanent, damage to the structures seriously affected; but in these long standing cases care must be taken not to confuse the pathological changes with those due to nerve syphilis. Clearly the disease is as much the concern of the ophthalmologist as of the neurologist or internist, and coöperation between all these is the ideal attitude in diagnosis and treatment.

Palitzsch, F. SEQUELÆ OF ENCEPHALITIS EPIDEMICA. [D. Arch. f. kl. Med., Vol. CXL, Nos. 5, 6.]

Palitzsch gives a series of results of encephalitis epidemica in thirty-one cases which could be observed for a period of almost two years. Motor symptoms were amyostatic rigidity from a slight degree to out-spoken forms, tremor of the hands, feet or entire body, rarely nystagmus, pareses in the cranial nerve regions, especially disturbances of convergence. Sensory and reflex disturbances only slight. Vegetative nerve disturbances were a partial sluggishness, partial absence of pupillary light reaction, outbreak of perspiration with no apparent cause, falling out of the hair, disturbances of menstruation and of potency. Psychically there were stubborn disturbances of sleep, headache, feeling of dizziness, diminution of mental functions, especially weakness of memory, retardation of affect to the degree of mental torpor. The blood revealed a lymphocytosis which might be considered as a persistent postinfectious one associated with neutrophilia and showing that the infectious process was not yet over. In certain cases some result was obtained by somatic stimulation, although generally speaking in the late stages there was little hope for improvement. Nine of the forty original cases had died in the acute stage of the disease. [J.]

Bastai, P. ON THE PATHOGENESIS OF HERPETIC INFECTION IN MAN AND ITS SUPPOSED RELATIONSHIP WITH THE AETIOLOGY OF EPIDEMIC ENCEPHALITIS. [Arch. per le sc. med., XLV, 3. Med. Sc.]

By inoculating on to the cornea of rabbits the cerebrospinal fluid from patients affected with various forms of herpes, a herpetic and transmissible keratoconjunctivitis was obtained. After recovery, the animals were resistant against further inoculations made on the same or the other eye. Similar inoculations made with the cerebrospinal fluid from normal subjects and from patients affected with tuberculosis, malaria, neurofibroma of the eighth cranial nerve, and encephalitis lethargica were attended by negative results. These observations and certain clinical

manifestations of herpes in mass (fever, sense of malaise, etc.) led the author to the conclusion that herpes in general and herpes febrilis in particular is a general infection with certain local manifestations which, though conspicuous, are only secondary in character. The author denies the existence of any intimate relationship between virus of herpes and virus of epidemic encephalitis, and suggests that the results obtained by Doerr and Levaditi and their collaborators are probably due to their having unknowingly used the virus of herpes in their attempts at transmitting encephalitis lethargica to rabbits. [C. da Fano.]

Menninger, Karl A. EPIDEMIC ENCEPHALITIS. [The Journal of the Kansas Medical Society, May, 1922, pp. 139-146.]

This is a summary of the established facts in regard to epidemic encephalitis, illustrated by case histories. The material was sifted from current literature with the particular assistance of the report published by the Association for Research in Nervous and Mental Diseases covering the 1920 meeting. The only original contribution is some emphasis in the matter of the endocrine changes which the author thinks have been more frequent and more severe than the literature represents.

Madsen, S. Tschudi. THE ULTIMATE PROGNOSIS OF LETHARGIC ENCEPHALITIS. [Med. Rev., Oct., 1922, p. 470. B. M. J.]

S. Tschudi Madsen has come to the conclusion that it is rare for the subjects of lethargic encephalitis to recover complete health. He has observed nineteen cases, four of which terminated fatally at an early stage. Of the remaining fifteen, ten were kept under observation for one year or more, and only in one case did the disease fail to leave any trace. Many patients showed slight mental disturbances; their memory was affected, and neurasthenic and psychasthenic symptoms were extraordinarily persistent. One of the patients was a boy, aged thirteen, who had previously been well behaved. After his discharge from hospital he was irritable and passionate, and, though he gradually regained his docile temperament, his capacity for concentration at school work was diminished. Some patients who retained their memory and intelligence lost all interest and initiative, being apathetic and performing every movement with a machine-like lack of individuality. Parkinson's disease supervened in two cases, and intention tremor and scanning speech were observed in one case a year after the onset of the disease. No satisfactory treatment has yet been devised.

Toomey, Dembo and McConnell. ACUTE HEMORRHAGIC ENCEPHALITIS. [American Journal of Diseases of Children, Vol. XXV, Feb., pp. 98-106.]

These authors report a case of acute hemorrhagic encephalitis following scarlet fever, in which at post mortem, thrombosis of the cerebral vessels accompanied by edema and hemorrhage was found. The patient,

a boy of six years, diagnosed as a case of scarlet fever on July 7th, was not very sick and was allowed up by his parents four days later. Twenty-one days after the onset he complained of sore eyes, photophobia, was drowsy and appeared to have some stiffness in the right leg. The next day his mother noted a squint, and also the fact that the boy became more lethargic. He vomited everything taken by mouth, and the rigidity of the right leg became more marked. He rapidly got worse, and the next day had repeated convulsions which started with twitching of the fingers. Lumbar puncture was done and bloody fluid withdrawn which was attributed to faulty technic. He was diagnosed as a uremia following scarlet fever when he was admitted to the hospital and treated as such. His past history was not essential. Physical examination showed the following positive points: A well developed child lying comatose, breathing rapidly of a cheynestokes type, with marked cyanosis, a protruded tongue, fixed staring eyes, with pin-point nonreacting pupils, and with a definite rigidity of the arms, legs and neck. Chest examination showed the presence of moist râles throughout. More complete examination could not be accomplished, the child dying forty-five minutes after admission. They conclude that the clinical picture together with the pathological findings would conform to the description of the Strümpell-Leichtenstern type of acute hemorrhagic encephalitis. They point out that there is no definite way to differentiate this condition in vivo from other complication of scarlet fever such as uremia, etc. [Author's abstract.]

Da Fano, C. HERPETIC ENCEPHALITIS. [Jl. of Path. and Bact., Jan., Vol. XXVI, p. 85.]

C. da Fano gives an account of the experimental investigation of herpetic meningoencephalitis in animals and of the evidence that has been collected establishing its close resemblance to encephalitis lethargica. Inoculation with the vesicular fluid from all forms of herpes, with the possible exception of herpes zoster, gives rise in certain animals to a fatal infection, which displays a marked affinity for the central nervous system, spreading within a few days to the brain of the animal independently of the material used for inoculation or the site selected for transmission. The cerebral lesion thus produced consists of an extensive small cell infiltration and marked degeneration of the nerve cells, which ultimately break down into a necrotic débris. Only by assuming the presence of a virus consisting of living microorganisms able to multiply within the central nervous system of the animal affected does the above condition appear explicable. The process is almost identical with that observed in human cases of encephalitis lethargica, and the regions affected are the same. Still greater is the similarity that exists between the lesions of herpetic encephalitis and those produced in animals by inoculation into them of the virus of encephalitis lethargica. The author considers it probable, therefore, that the viruses of herpetic and lethargic

encephalitis belong to the same pathogenic group. In the central nervous system of animals suffering from the former condition granular structures occur closely resembling certain "minute bodies" which have been described in the latter, and the suggestion is made that the smallest of these granular structures (herpetic minute bodies) may be the virus itself, or, at any rate, particles of organic matter to which the virus closely adheres. Whether the latter is of the filter-passing variety and whether it can be grown in culture media are as yet uncertain.

Naville, F. EPIDEMIC ENCEPHALITIS. [Rev. Méd. d. l. Suisse Rom., Jan., XLIII, No. 1. J. A. M. A.]

Naville estimates that there must have been from 150 to 200 cases of encephalitis at Geneva during the epidemic of 1918 to 1921, and forty-three of the patients are known to have probably permanent sequelæ. He encountered also eleven others with a history of encephalitis elsewhere, a total of fifty-four cases. His conclusions harmonize with those of others who have reported that from 15 to 20 per cent die during the acute phase, and complete recovery follows in only 30 to 40 per cent of the well defined cases. Whenever Parkinsonian symptoms are observed outside of the first stage of the disease, it is almost certain to entail disability. Notwithstanding the great diversity in the clinical picture of the disease at first, there is a great sameness in the sequelæ. They are either of the Parkinsonian type, with contracture, or there is a psychomotor and mental inertia, without contracture. This latter type is twice as common as the Parkinsonian form, and the outlook for recovery is graver. In children, the prognosis of the mental disturbances cannot be determined as yet. In five children the sequelæ were of the Parkinsonian type; in four others, of the insomnia-excitement type. Naville reiterates that the sequelæ of epidemic encephalitis are absolutely pathognomonic. They form new clinical pictures not known before.

Cousin, G. OCULO-MOTOR LESIONS IN LETHARGIC ENCEPHALITIS. [Paris Med., Vol. LIV, Sept. 2.]

G. Cousin remarks that the oculomotor changes in lethargic encephalitis vary considerably, and in some cases may constitute the whole clinical picture. The following classification is adopted: (1) Clinical forms differing according to the situation of the lesions. The nuclei of the third nerve are principally affected, the symptoms being as follows: Ptosis, especially at the onset, insufficiency or paralysis of the rectus internus with nystagmiiform jerkings, ophthalmoplegia interna, and paralysis of accommodation either alone or in association with the other symptoms. Paralysis of the sixth nerve is rare and may occur in association with that of the third nerve or alone. Paralysis of the fourth nerve has hardly ever been observed in lethargic encephalitis. (2) Clinical forms varying according to the intensity of the symptoms. Ocular

palsies are a constant feature of the disease, whatever the intensity of the symptoms may be, being found alike in the well marked forms characterized by somnolence and fever, and in the incomplete forms in which they may be the only symptoms, sometimes consisting merely in paralysis of convergence or accommodation. As a rule, progressive improvement occurs and the symptoms completely disappear, except when the Parkinsonian syndrome develops, in which case they may persist in a more or less attenuated state, especially in the form of slight paralysis of convergence. Syphilis and botulism must be excluded in the diagnosis. No special treatment is required.

Olaechea, M. G. EPIDEMIC ENCEPHALITIS. [Anales d. l. Fac. d. Med., Sept.-Oct., V, No. 3.]

The sudden onset of intense frontal and orbital headache was the first symptom of the disease. It ran its fatal course in less than a month. It was of the choreoathetoid type, and there was pronounced softening of the thalamostriatal region of the brain.

Higier, H. CONTRIBUTION TO THE KNOWLEDGE OF THE RARER SYMPTOMS AND FORMS OF EPIDEMIC ENCEPHALITIS. [D. Zschr. f. Nervhkl., Vol. LXXV, Nos. 4, 5.]

Higier mentions among the more unusual symptoms abnormal post mortem rise of temperature, polypnea, violent pains often changing in location, the most varied symptoms of paralysis, feeling of thirst and of hunger, disturbances of sleep, etc.

III. SYMBOLIC NEUROLOGY.

1. PSYCHONEUROSES; PSYCHOLOGY.

Maier, H. W. CATATHYMIA, ATHYMIA, SYNTHYMIA. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

Maier describes other psychogenic mechanisms than those he has already designated as catathymic. He brings examples from the results of encephalitis to illustrate the athymic mechanism by which previous organic disturbances become psychogenically fixed without involvement of affectivity. He names as synthymic that other form of psychogenic occurrence in which the entire personality is suddenly overpowered by a quite subordinate affect suddenly released with disturbance of the association control as in psychogenic states of excitement in organic brain diseases.

Liepmann, W. PHANTOM PREGNANCY. [Med. Klin., Vol. XIX, Aug. 12. J. A. M. A.]

Liepmann analyzes phantom pregnancy from the standpoint of his law of the threefold substratum of the female psyche through the entire

animal kingdom, namely, inhibition, vulnerability and pansexuality. It is interesting that, according to R. Kantorowicz, a similar state of phantom pregnancy can occur in female dogs, especially dwarfed ones, which have not been covered. Even the mammary glands may swell and secrete.

Kretschmer, E. CONSTITUTION AND RACE. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

Research into racial types and constitutional types have not proceeded from the same roots nor along the same lines. Therefore, Kretschmer states, the types are rather in opposition than identical. Racial types have been investigated historically and from the standpoint of the most vigorous individuals, constitutional types physiologically and with consideration of the most marked weaknesses. Yet this does not deny that race control coincides with definite elements of the constitutional groups as these best adapt the individual to the given environment and also that those elements constitutionally closely bound with the desired product should be taken into consideration. These bring the racial type close to the constitutional. Critical observation therefore can find in the racial theory much confirmation of results thus far found in constitutional investigation. Among relationships which exist the author points out the more schizothymic characteristics of the slender North Germans as compared with the more cyclothymic of the South Germans who possess more of the Alpine elements.

Kläsi, J. TREATMENT OF GASTRIC NEUROSES. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

Kläsi recommends decided treatment in cases where rapid suggestive treatment is desired. Psychic factors fitting the individual case are to be taken into account but a definite course may be followed, isolation, for some days, only tea with a little sugar to be given until hunger is acute. Then this diet is to be broken off and that food to be given which formerly was the least tolerated. He reminds his readers that "the physician at the sickbed and the physician at the autopsy table are two different men of two different callings." More attention to the former calling would have good results.

Mitchell, E. G. PHYSIOLOGIC DIAGNOSTIC DREAM. [N. Y. Med. Jl. and Med. Rd., Oct. 3, Vol. CXIX.]

In the physiologic diagnostic dream, so termed by Mitchell, sex symbolism is a secondary matter. The beginning lesions are giving rise to pains or sensations so slight that they remain unnoticed during the distractions of the day. In sleep the stimulus produces a dream whose content corresponds absolutely to the type of sensation and to the location of the physical trouble. A characteristic of these dreams seems to be that they are repeated. Four cases in point are cited.

Dupouy and Minkowski. TATTOOING AND SEXUAL PERVERSIONS. [Encéphale, Vol. XIX, Jan.]

Dupouy and Minkowski report the history of a patient with irresistible impulses to tattoo himself. The impulses alternated with masturbation and perverse sexual intercourse.

Homburger, A. LICHENOID ERUPTION AS PSYCHOGENIC DERMATOSIS. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXII.]

Homburger reports the appearance of a lichenoid eruption in a thirty year old woman who was in a psychic conflict in which for a time she longed for a former lover whom otherwise she hated. The eruption appeared on those portions of the body which the lover earlier had covered with flowers. The eruption disappeared after she was able to talk the matter out. Jelliffe has reported similar mechanisms in a case of psoriasis.

Boven, W. PSYCHOPATHOLOGY OF "NORMAL" FAMILIES. [Schw. Arch. f. N. u. P., Vol. XV.]

In study of thirty-two families, including 600 individuals, Boven found that insanity is conditioned already in early phases of ancestral life which as yet may be considered clinically normal. Yet peculiarities of parental characteristics can result, after two or three generations, in schizophrenia, cyclothymia, paranoia, and so forth. He presented a continuous scale of normal peculiarities, one pole of which—extreme altruism—corresponds to cyclothymia; the other, to dementia precox. Great moulding factors of and on the primordial morbid predisposition are marriage, education and external causes for conflicts. Boven hopes that more exact knowledge of the laws of characterology will bring about better clinical results, too.

Bose, G. THE RELIABILITY OF PSYCHOANALYTIC FINDINGS. [Brit. Jl. Med. Psych., Vol. III.]

Critics very often condemn psychoanalytic interpretations as fanciful and unscientific and there are psychoanalysts who do not hesitate to dogmatize on their findings and regard them as "settled facts" even when the analysis has been of a very cursory nature.

Psychoanalysis is concerned with the unearthing of unconscious elements of the mind and as such it labors under certain peculiar difficulties which are not apparent in other sciences. The very nature of the unconscious elements is such as to resist their emergence into the conscious sphere and even when they have been unearthed the tendency is to disown them.

Psychoanalysis brings to light those tendencies of the mind which are being suppressed in the course of evolution; it drags us back to the past which we would all like to forget. We are therefore apt to underestimate the value of such findings. On the other hand there is a certain type of mind which takes peculiar pleasure in dwelling on things shunned by the

majority and to such persons all psychoanalytic conclusions assume an exaggerated significance. In the face of these contradictory tendencies of the mind it is extremely difficult to maintain an unbiased attitude and to evaluate the findings on strict scientific basis. Some sort of criteria is therefore all the more necessary in psychoanalysis to judge the relative value of the assertions of different workers.

Psychoanalytic interpretations must always be of the nature of hypothesis. They must not be confounded with "facts." Psychoanalysis concerns itself with processes in the unconscious level of the mind and as such they can never be matters for direct perception. A "complex" is a matter for psychoanalytic investigation so long it is unconscious. The psychoanalytic physician does not concern himself with conscious motives for action. It is extremely difficult to prove the correctness or otherwise of a factor which cannot be directly appreciated. Since a psychoanalytical interpretation must necessarily be of the nature of a theory it can never be directly proved. Its correctness can only be determined in terms of degree of probability. One interpretation is more likely than another but no interpretation is absolutely certain.

In judging the accuracy of an interpretation we ought to be guided by exactly the same principles as are employed in the formulation of a theory in any other branch of science.

The first principle that should guide us in the selection of a theory is what is known technically as the "economy of hypothesis." According to this principle we should prefer a single and simple explanation to a multiple and complicated one or in other words when a fact may be explained on a simple supposition there is no justification in explaining it as due to multiple factors.

The next principle may be described as the principle of familiarity. Of two theories the more familiar one is the more likely. When a fact may be explained by a known law of nature there is no justification in postulating an unknown force as an explanation.

The third guiding principle is the principle of extension. The more extended the application of a theory the greater the chance of its being true, *i.e.*, the greater the number of facts that could be explained by a theory the greater is the chance of its validity.

The fourth principle is the principle of analogy. When a theory has been proved to be valid in a large number of cases it is likely to be true also in any other similar case.

Every psychoanalytic interpretation is usually met by another explanation by the patient.

The psychoanalytical interpretation thus always stands as a rival to some other explanation. To assert its validity the following conditions therefore ought to be fulfilled:

(1) It must explain the action in a better and simpler manner than the explanation put forward by the patient.

(2) The interpretation ought to fit in with other events of the patients' life for which separate explanations are necessary from the conscious standpoint.

(3) The nature of the explanation should be more or less familiar in other spheres of life.

(4) The trustworthiness of the interpretation would be greater if it serves to explain dreams, myths, rituals, etc., and if it is supported by philological and other evidences.

(5) The explanation becomes very probable if it has been proved to be accurate in case of similar symptoms in other patients.

(6) The interpretation gains decided support in case of symptoms when such symptoms are removed after analysis.

(7) The interpretation may be admitted as true by the patient. The value of such admission is not always very great. When positive transference is very marked the patient is often willing to admit anything coming from his physician; this may bring about a cure in some cases but the truth of the interpretation is not necessarily proved. There is a type of intelligent patient who are willing to believe an interpretation because it happens to be supported by psychoanalytical authorities. The value of admission by the patient is of course very great when such admission is the result of direct appreciation of the truth of the interpretation. But in such cases the interpretation ceases to be an interpretation and becomes a question of fact.

(8) All rival explanations ought to be less satisfactory than the given interpretation. If a conscious explanation is as good as the psychoanalytic interpretation we have no right to urge the acceptance of the latter. Of course in such cases the truth of such interpretation is not necessarily excluded. (Author's abstract.)

Hauptmann. MENSTRUATION AND PSYCHE. [Read at the Vers. südwestdt. Neurol. u. Irrenärzte in Baden, 1923.]

The author attempts to bring somatic processes into closer relation to the psychotic symptom complexes which may arise in connection with them, to find not a mere external relation between the two, based on a "parallelism" which cannot be bridged, but to discover in how far there is a real inner connection. He believes that the results of this present investigation come nearer to the realization of the proof of Hoche's conception of the coupling of symptoms, the finding of syndromes lying ready in the psyche to accompany physical manifestations. Hauptmann's investigations were made upon menstruation, which is at the same time a physiological and a pathological endocrinous process which frequently has a relation to the periodic and climacteric psychoses. The author believes also that a true menstrual psychosis must not be entirely denied. He based his investigation upon three questions: 1. Are definite psychic symptoms present at menstruation, the regular appearance of which symptoms may be taken as proof of a definite influence of endocrinous

processes upon the brain? 2. Are the psychic symptoms only the expression of the predisposition of the particular individual? 3. Are corresponding psychic symptoms to be understood as the reaction to be expected to the menstrual influence in the widest sense? The answer to the questions was sought through an investigation of trained psychiatric students, in part by a questionnaire anonymously answered, in part orally.

The results are given according to five groups: 1. Simple increase of sensory stimulability resulting in increased efficiency in producing actual values (normal well-disposed individuals); 2. Increase of sensibility to a pathological degree (irritability) resulting in ineffectual activity (nervous, badly disposed individuals); 3. Bodily discomfort to which the reaction was dissatisfaction, irritability, distaste for work, need to shut oneself away, lowering of attention, of conceptual ability and of ability to concentrate. Proof that this was a psychic reaction, not one due to direct endocrinous action upon the brain, the author finds in the fact, among others, that in this group were only individuals with bodily discomfort not those with the same psychic symptoms without bodily disturbance, and further that these individuals reacted to other bodily disturbances in the same manner. 4. Paranoic reaction, again a reaction to the altered ego feeling due to the fact of the menstruation and not the physical discomfort. It consisted in the sense of a desire for indulgence and consideration, as it were a "potentialized femininity." The altered ego feeling was projected upon the environment as if individuals there had grown inconsiderate of the subject. Here, where there was increased libido, which the subject would not admit but sought to repress, harmless occurrences in the environment were considered in hallucinatory manner as directed against her. 5. Predisposed individuals where menstruation, as other occurrences had done, caused a depressive melancholy or heightening of peculiarities of character, selfishness, egoism, ambition, etc.

The author concludes therefore that these psychic disturbances with menstruation are not an expression of a direct effect upon the brain by endocrinous processes. They either confirm the results of former experience, that they are psychic manifestations on the basis of an abnormal predisposition, or, what the author feels is the important fact discovered, they are universal psychic symptoms as universal reaction, not confined to the individual, either to bodily discomfort or to the changed ego feeling. Hauptmann believes that psychiatric research should be directed to understanding this connection in other somatic processes also, which are open to investigation, *e.g.*, in thyrointoxication in Basedow's disease or in experimental poisoning, with alcohol, cocain, etc. These investigations would lead on to the more complicated organic psychoses. Jelliffe and White have developed analogous principles for some years.

Vinchon. THE FAMILIES OF PSYCHOTICS. [Progres Méd., Feb. 2, 1924.]

This paper deals with an important topic in psychotherapy, namely "family interference" without realization of the harmfulness of the old

conditioned reflexes of the environment. The close relatives of a psychotic do not realize how harmful for him their ill advised care may become. They first try to hide his eccentricities. Later, when the patient offers violent resistance, with hallucinations, and interprets things and events in a morbid manner, acts dangerously toward his environment, or becomes quite unmanageable in his dementia, then the emotional reaction of the family not only conflicts with the patient's own interests but with those of the family itself. In fact, the entire family develops a certain kind of abnormal nervous condition from the strain which the patient's management exacts of them. Proper education of the relatives would relieve this condition.

Caillé, A. LEFT-HANDEDNESS AS EDUCATIONAL PROBLEM. [Ann. of Clin. Med., Vol. V, Sept.]

This author thinks left-handedness has a structural, atavistic basis and is not an acquired faulty habit. The attitude of parent and teacher toward left-handedness should be adjusted to the degree and character of its manifestations. Mild types in which the stimulus for preferential action is weak, are readily overcome by educational efforts. Conversely, it is not difficult to train the left hand when the use of the right hand is lost through injury or disease. In persistent sinistrality, particularly if combined with speech defects, right-handedness should be encouraged but never forced. Unreasonable discipline creates an unbalanced condition akin to mental chaos.

Schilder, P. PSYCHOLOGY OF EXCEPTIONAL EPILEPTIC STATES. [Ztschr. f. d. ges. Neur. u. Psych., Vol. LXXXII, Nos. 1, 2.]

Schilder views the experiences of death and rebirth in epileptic twilight states typically as the representation of the biological shock and its abatement. Archaic material appears at such time. Schilder considers the twilight condition a return to narcissism. (See Rank's Trauma of Birth.) There are severe disturbances of thought and comprehension. But if something is once comprehended this will come to consciousness again after the condition has passed away. The content of the delirium is remembered with difficulty because it is material foreign to the daily personality. The disturbances of memory in the epileptic twilight states are closely related therefore to the hysterical and the hypnotic.

Zacks, D., Pettingell, O. S., and Stanhope, A. H. NATURAL POSITION IN SLEEP. [Bost. Med. and Surg. J., Vol. CLXXXIX, J. A. M. A.]

It would appear from the study made by Zacks and others, that the natural posture of rest in sleep will vary inversely with the length of the period of observation. The more prolonged the period of observation, the greater the tendency of the subjects to appear in the "either side" column. There does not appear to be any definite relation between the natural posture assumed in sleep and the side affected by tuberculous

disease. In eighty-two cases analyzed, the left side and the right side were equally affected, both as to frequency and extent of lesion. It is the author's impression that in artificial pneumothorax, even in the classical one-sided lesions, the collapse must be gradual or the disease will spread to the well or better side more rapidly or will tend to involve either the larynx or intestine. They strongly believe that general, physical, mental, and emotional rest, preferably bed rest, for a period varying with the individual indication, must be enforced upon the tuberculous subject and the earlier the better if he is to gain the most benefit of the present accepted rational treatment.

Fischer, S. THE SO-CALLED DISTURBANCES OF CONSCIOUSNESS. [Arch. f. Psych. u. Nervkrh., Vol. LXVII, No. 5.]

Fischer divides the disturbances of consciousness into pure stuporous states such as somnolence, soporose condition, coma, and dreamy stuporous states, deliria, amentia, twilight states. He criticises however the expression disturbances of consciousness when it is used for the morbid narrowing of ability of comprehension or consciousness of objects because if consciousness means the entire, real, phenomenological existence of the empirical Ego, then all the conditions of the morbid psychic life must be included in it. If consciousness has only the same significance as consciousness of objects then the term disturbances of consciousness used in reference to stuporous states emphasizes an important symptom but does not sufficiently designate the symptomatic picture. In conditions where the ability for comprehension is pathologically narrowed, there is a pathological narrowing of the consciousness of objects not of consciousness.

3. PSYCHOSES: DEMENTIA PRECOX; MANIC DEPRESSIVE PSYCHOSIS; SENILE AND DEFECT STATES.

Prideaux, E. EMOTION IN MENTAL DISORDER AS SHOWN BY PSYCHOGALVANIC REFLEX. [Br. Jl. Med. Psychol., Vol. II, p. 23.]

The author first would try to define emotion. Ward, Stout, Shand, McDougall, Lloyd Morgan, Drever, Ribot, James-Lange, Cannon, Sherrington and others are all quoted and intelligently discussed. Carver has given a definition, related to Drever's, which the author is inclined to adopt. "As the subjective experience which develops when gratification of the instinctive impulse is held in check by higher level control"—and to develop it as follows: "a subjective feeling consisting of central excitement and consciousness of peripheral sensations, occasioned by situations which powerfully oppose or facilitate the aim of any instinctive impulse." In order to study such oppositions or facilitations the author has utilized the psychogalvanometer. A number of pages are devoted to the technique, carefully elaborated in a special thesis in Brain—1920 (with historical résumé). The author concludes: (1) The term "emotion" is used in this paper as a subjective feeling consisting of central excite-

ment and consciousness of visceral sensations. (2) The James-Lange theory is untenable except in a very modified form. (3) The psychogalvanic reflex is in the same person at the same time and under the same conditions an indication of the intensity of crude emotions as subjectively experienced. (4) There is considerable variation in the amount of the reflex in the same person at different times due to such causes as fatigue, alcohol, menstruation, etc. (5) The psychogalvanic reflex is not necessarily a criterion for comparing emotional reactions in different persons, unless we accept the James-Lange theory—taken by itself it only indicates the reactivity of the skin. But it seems to be a criterion of the amount of visceral sensations which are the concomitants of emotion and which reinforce what would otherwise be only a momentary excitement. (6) The psychogalvanic reflex is conditioned by the state of the cerebral cortex, but the relative parts played by the condition of the skin, the optic thalamus, and the reactivity of the autonomic nervous system have to be determined. (7) In patients with definite cortical degeneration or maldevelopment the reflex is very small or non-existent, in cases where organic changes in the cortex are probable it is comparatively small, and in others in whom there is no evidence of cortical change it is much larger. (8) The view of James and Janet that the emotions of the hysteric are largely artificial is probably correct.

Freud, S. 1. NEUROSIS AND PSYCHOSIS. [Int. Zeit. f. Psa., Vol. X, No. 1.]

Freud here discusses the neuroses and psychoses in connection with the principles and mechanisms set forth in his recent work *Das Ich und das Es*. The neurosis implies a conflict between the Ego and the It ("Das Ich" and "Das Es"), while the psychosis results from an alteration in the relations between the "I" and the external world. This formula taken absolutely does not always conform to the facts, as countless transitional types are possible, but broadly speaking it is in conformity with the conditions. The results of analysis show that the transference neuroses arise when the ego refuses to accept a powerful instinctive impulse belonging to the "It" and bring it to motor outlet, or withholds from this impulse the object toward which it is directed. The ego asserts itself through the mechanism of repression, the repressed material rebels against its fate, and taking a path over which the ego has no control, it finds a substitute which imposes itself on the ego in the form of a compromise. Finding its integrity menaced by this intruder, the ego enters on a conflict against the symptom, just as in the first instance against the instinctive impulse, and from this condition of things the neurosis arises. It is no valid objection to the formula proposed that the ego, when it undertakes the repression, obeys the command of the super-ego, which is really a representative of such influences of the outer world as have been able to find representation in it. The fact always remains that the ego has aligned itself with these powers, and that, in the ego, their claims are

stronger than those of the "It" and that the "Ego" is the force which sets the resistance to work against the "It" and endows the resistance with stability through the anti-cathexis. The ego has come into conflict with the "It" in the service of the super-ego and reality, and this is how the transference neuroses originate.

On the other hand the mechanism of the psychoses is equally clear. Meynert's amentia, acute hallucinatory confusion, may be taken as perhaps the most striking form. Not only does the external reality belonging to the actual present disappear, but those incidents and events of the past which have become memories, disappear as well. These patients cease to perceive actual facts and to preserve their traces. They create for themselves a new external world, following the inclinations of the "It." Reality is found unpleasant to the ego, and the effort is made to avoid it, to render it non-existent. The relation of the psychosis to the dream is obvious. In a certain form of psychosis, schizophrenia, the patients show a tendency to render themselves impenetrable to the external world—to shut themselves off from it entirely. In respect to the genesis of the delusion, Freud says, that certain analyses have shown that the delusion is produced like a scar at the place where originally there was a gap in the relation of the ego to the external world. If this pathogenesis is obscure in some cases, it is without doubt, because there have been efforts in the direction of recovery and reconstruction which mask the real conditions.

The etiological factor common to the neurosis and the psychosis is abstinence, the non-satisfaction of those infantile desires which are so deeply rooted in our phylogenetically conditioned organism. In a last analysis this non-satisfaction is always due to external circumstances, in some cases to that inner agency (the super-ego) which has taken over the office of representing the requirements of reality. The pathogenic effect depends on whether, in the conflict, the ego remains true to its allegiance to the external world and places a restraint on the "It," or is conquered by the "It," which then breaks loose and attains to realization. A complication is introduced in this seemingly simple situation by the existence of the super-ego which unites within itself still somewhat obscure influences originating in both the ego and in the external world. It seems to be, as it were, an ideal model to which all the efforts of the ego are directed, a reconciliation of all the various dependencies of the ego. The behavior of the super-ego must be taken into consideration in all forms of mental disease, something which hitherto has not been done. It must be assumed, until more conclusive proof is set forth, that there are disturbances due to a conflict between the ego and the super-ego. Analysis gives us the right to believe that melancholia may be regarded as a paradigm of this group and then we might adopt the name "narcissistic psychoneurosis." It would not be in contradiction to his impressions, says Freud, if we should find reasons for separating melancholia from the other psychoses. In this way three categories of conflicts are obtained:

(1) between the "Ego" and the "It"; (2) between the "Ego" and external reality, and (3) between the ego and super-ego, and the outcome of all such situations will undoubtedly depend upon the economic relations of the factors involved, on the relative strength of the various forces in conflict.

Crichton-Miller, H. PSYCHOPHYSICAL INTERACTION. [Lancet, Oct. 4, 1924, J. A. M. A.]

According to Crichton-Miller one of the best examples of conditional etiology is probably dementia precox. The factor of gonadal inadequacy has been clearly demonstrated by Sir Frederick Mott's researches. Jung and other analysts have shown the constant presence of a conflict over authority. These theories may seem mutually contradictory, but if we regard them from the point of view of conditionalists, we see in them factors which by their conjunction may determine the familiar psychosis. It is clear that the adolescent, as he passes into maturity, regards the challenge of life in relation to two factors. The first is the menacing character of that challenge, and the second is the biologic sense of adequacy within himself. If a boy is always assured by his father that he will never succeed in life if he does not mend his ways, he is apt to conceive of life as a very arduous and exacting proposition. If he feels the potency of a normal young adult male, he will face this and make good. But if the endocrine factor is defective he will retreat from life, and if it is very defective he will still retreat from it, though the prospect of manhood has been presented to him in perfectly suitable terms. There are certain scientific circles in which it is fashionable nowadays to decry organotherapy. It is very natural. The commercial drug houses have exploited organotherapy with more zeal than wisdom. The subject is intensely complex, and it is always easy for the scientist to attribute to suggestion any therapeutic efficacy that may be claimed for organotherapy. The organotherapy of to-day may be a very feeble affair, but the organotherapy of to-morrow, is going to be based largely on honest clinical observation. There is nothing more dramatic in the whole of medicine than the dissipation of the depression of a subthyroidic patient by the administration of thyroid extract. There is a range of subtle subjective phenomena that depend on endocrine deficiencies or disequilibria and one day we shall be able to treat them by an improved organotherapy.

BOOK REVIEWS

Plaut, Felix. PARALYSESTUDIEN BEI NEGERN UND INDIANERN. EIN BEITRAG ZUR VERGLEICHENDE PSYCHIATRIE. . [Julius Springer, Berlin.]

Professor Kraepelin contributes an introduction chiefly of acknowledgment of thanks to Dr. H. C. Loeb through whose interest and support both he and Professor Plaut were enabled to make the journey to America and study the problem of paresis among the negroes and Indians during 1925.

Dr. Plaut has prepared this very valuable monograph of 100 pages as a record of the trip and has brought together all of the studies heretofore made and added very materially through direct observation of himself and Professor Kraepelin. The opening pages orient the reader to their journey. It certainly could be said to rival the celebrated round the world in 80 days.

The negroes in America are first discussed, their distribution, admixtures with whites and then their syphilitic history. The incidence of syphilis seemed to increase after the Civil War. The causes therefore are too complicated to set down and Plaut does not attempt a complete analysis.

Paresis before 1860 is also difficult to size up statistically. Some writers have claimed that full blooded negroes did not develop paresis. Others, the contrary. The official census statistics concerning the psychoses in the U. S. only began with 1850 and are recognized to have been very defective. No data concerning paresis were available before 1880. Paresis among negroes appeared in these figures. Whether pure race or mixed race factors enter cannot be determined. Paresis in colored women would appear as a result of luetic infection much more frequently. The phenomenology is about the same although the negress seems to develop the disease early, inclines more to the simpler dementing types with hallucinations.

Dr. Plaut's observations upon the negro patients at St. Elizabeths are specially interesting. At first seeming different, later it appeared that they came to the same levels as paretics all over the world. Inasmuch as no German literature exists concerning these types he gives several case histories in detail. Among many other carefully circumscribed conclusions Plaut says that paresis in negroes presents no special anomalies from those found in other races. Possibly "tabes" presents some special situations since it seems to be relatively infrequent.

In Cuba paresis could seem to be less frequent than among the North American negro. This is not due to any difference in infection percentages, since the Cuban negro is probably as syphilitic as

the northern even if the statistics show less. Here some situations may be found concerning the unknown X—which bears upon the development of paresis, other than syphilis.

Concerning the Indians, thorny statistical as well as phenomenological problems arise. Whether they had syphilis in the pre-Columbian days is still an open question that must be settled archeologically. Hrdlicka is quoted as doubting its presence. In 1709 the presence of syphilis in Indians seems definite.

Plaut's own observations on the parietic Indians shows there are such in typical form, case reports of which he gives in detail. Thus no immunity can be claimed, as has been maintained heretofore. Whether these were "pure blooded" Indians cannot be definitely established, and a host of problems are presented which need more intensive study.

Among the Mexican Indians paresis is to be found. Plant emphasizes that the expansive forms are quite definite and maybe are more striking than in the more northern types.

Special attention was given throughout to the question whether smallpox or vaccination bore any relation to the incidence of paresis, as has recently been claimed by Daraszewicz and other observers. No justification for such an opinion was found by Plaut. Vaccination-free parietic Indians were definitely found.

A fascinating and valuable monograph.

Haerberlin, Carl. VOM BERUF DES ARZTES. Zweite, neu durchgesehene Auflage. [Otto Gmelin, München.]

A pleasing, readable little book upon general problems of the medical practitioner. The author, a physician at Bad Nauheim, first deals with the scientific training of the physician and the nature of thinking in scientific medicine.

He then deals with the art of medicine and finally devotes 30 pages of this 120-page book to medical activities—the doctor as friend and companion—his social aspect, combined with his scientific attitudes and his application of them. As stated, a readable, sensible little book, with no excess of German romanticism so frequently found in pamphlets of this type.

Thalbitzer, S. EMOTION AND INSANITY. [Harcourt, Brace & Company, New York.]

A recent volume of the International Library of Psychology, Philosophy and Scientific Method series; not recent in origin, but new in dress. It is a translation of Thalbitzer's very valuable work upon the relationship of the emotional life to the development of psychoses.

For some unaccountable reason the word "Insanity" hangs on in English. It no longer has any sanction in medicine; it is a Roman fossil preserved in law and has no significance in psychiatry—save in the medico-legal field. This is our only objection to the book, *i.e.*, the poor title. The work itself has always been one of great interest

although at the present time it comes late upon the arena. Since the psychoanalytic school has shown the emotional content and context back of almost every bit of psychotic behavior—a generalized series of statements, such as this work contains are passé. They are so well said, however, that no one will regret having this very interesting work in English.

Schilf, Erich. DAS AUTONOME NERVENSYSTEM. [Georg Theime, Verlag. Leipzig.]

This is a monograph of 200 pages upon the vegetative nervous system. The author does not like this name—he prefers Langley's term, in fact everything that Langley says is orthodox with the author. Some Englishman made the objection that Vegetative refers to vegetables, and as plants had no nervous system, the vegetative nervous system was a bad name. This is so typically John Bullian, particularly in its denseness, that we note with amusement this author accepting this argument. And then many years ago the nervous reactions in plants was recognized by Haberlandt and now our Indian savant Bose—long a student of electrophysiological phenomena in plants, is speaking of the nervous system of plants as though it were known to everyone. And if one should wish to turn this author's argument against him would not all "humoral" processes be distinctly vegetative and when he speaks of tissues without a nervous system these, although none such exist, would act vegetatively.

One picks out this little fly in the pot of ointment in an extremely good book—*i.e.*, physiologically speaking—but our experience with physiologists has been to find them very dense and dogmatic. This book is no exception. It is filled with physiological dogmas, the one most annoying to us being Langley's old notion that there was no afferent aspect of the vegetative nervous system (p. 9). Now that that it has been abundantly shown, in both nonmyelinated and myelinated fibers it is strange that the author holds on, pursues his argument along these lines and then later in the book gives a very inadequate chapter on the afferent system which negatives at least 10 per cent of his previous statements.

A book that does not even index André Thomas' name is certainly not very up-to-date on the vegetative nervous system. The chapters upon the midbrain and cortical aspects of the system are quite inadequate.

A good book for a physiologist probably, but for a neuropsychiatrist we prefer Müller, or Greving, or Dresel, or Laignel-Lavastine, or Higier. At the same time it is most conscientiously written even if not quite up to date.

Wittels, Fritz. DIE VERNICHTUNG DER NOT. [Anzengruber Verlag. Leipzig & Wien.]

An interestingly written monograph upon social problems of food supply—clever at times—witty again, quite communistic and at times a trifle paranoid.

Jaspers, Karl. STRINDBERG UND VAN GOGH. [Ernst Bircher, Verlag. Bern.]

Dr. Jaspers is Professor of Philosophy in the University of Heidelberg. He has written a large work upon Psychopathology which is not without considerable merit even though Jaspers has little comprehension of the Freudian views. It is all the more interesting therefore to note his entrance into the field of pathographic biography where the results of his psychopathological methods may be put alongside such work of a similar nature that has come from the psychoanalytic school.

Jaspers entitles this a pathographic analysis with comparative notes upon Swedenborg and Hölderlin.

Jaspers shows the development of a schizophrenic process and compares this to what he terms an analogous type of evolution in the case of Swedenborg. Van Gogh and Hölderlin also developed the disease but the phenomenology belonged to a different type.

The most attractive parts of this fascinating little monograph are the two completing chapters, in which Jaspers deals with the relations of schizophrenia and work and schizophrenia and modern culture. Here the author has thrown into the arena a number of suggestive ideas, but for the most part to us they touch upon the surface of life only. They do not go very far within.

Bunemann, Otto. UEBER DIE ORGANFIKTION. [Felix Meiner, Verlag. Leipzig.]

Vaihinger with his neoKantian "fiction" conceptions has introduced an extremely productive series of ideas into our methods of reasoning. These have only begun to penetrate into the fields of biology and from them into the medical discipline. This essay of Bunemann, or more properly speaking, small monograph of 93 pages—makes practical use of the "As If" logic in the investigation of the psychogenic factors in disease. It is a very suggestive little work and full of interesting and unique modes of statement of old problems. These lie chiefly in the field of the neuroses and offer some help in this as yet too little understood field.

Frank, Karl. DIE PARTEILICHKEIT DER VOLKS UND RASSE-ABERGLÄUBISCHEN.

Krentz, R. J. DER NEUE MENSCH.

Kammerer, Paul. SIND WIR SKLAVENHER VERGANGENHEIT ODER WERKMEISTER DER ZUKUNFT.

Heller, Max. DER BEWAFFNETE PAZIFISMUS DER AUFSTIEGE. [Anzengruber Verlag. Leipzig and Wien.]

We have grouped these four pamphlets issued from one series dealing as they do more or less with social psychology. They are not deep treatises but are more or less sincere essays. Frank's pamphlet deals with national prejudices, race hatreds and superstitions. Dur-

ing the past ten years these have all been so actively propagandized, that one might have imagined that the masses were onto the trick—but they are not—it is doubtful if they ever will be.

Krentz here publishes two lectures the chief burden of which is that the “new mankind” is greatly needed. An interesting collection of words.

Kammerer's thesis is a little more technical in that this well known biologist weaves in popular form the protest against a too strict Weissmannism and deals with the modified neoLamarckian possibilities of racial evolution through acquired neural patterns.

Finally Heller deals with the idea of an armed pacifism.

Martin, Anna. DIE GEFÜHLSBETONUNG VON FARBEN UND FARBEN-KOMBINATION BEI KINDERN. [Hermann Beyer u. Söhne. Langensalza.]

A small monograph belonging to a series of philosophical and psychological studies (*Pädagogische Magazin*, 831), edited by Ziehen, dealing with some work done in his laboratory upon the color interests of children especially with reference to their affective reactions to colors and the use to which such information may be put in teaching. Needless to say it is a careful, accurate and scholarly little volume.

Bonhoeffer, K. and His, W. BEURTEILUNG, BEGUTACHTUNG UND RECHTSPRECHUNG BEI DEN SOGENANNTEN UNFALLNEUROSEN. [Georg Thieme, Leipzig.]

A small compact paper summarizing the general situation particularly from the angle of the preparation of official expert opinions to guide the court.

Since the procedure is so different in the German courts from that followed in the U. S. A. the report is of secondary interest, but inasmuch as a careful revision of the concepts concerning the traumatic neuroses is presented it is a paper well worth reading.

Stier, Ewald. UEBER DIE SOGENANNTEN UNFALLNEUROSEN. [Georg Thieme, Leipzig.]

An excellent small monograph of 84 pages dealing with traumatic neuroses. The author traces the difficulties in definition and sketches rapidly the historical development of the idea and touches upon the waves of occurrence of the phenomena which were so massive in the World War.

The present small volume is meant for the practising physician and represents a precipitate of the author's experience during the past 25 years as a medicolegal expert in neurological matters. He skillfully portrays the symptomatology, especially casting an eye upon the social situation of the patient. Whether insured or not, whether indigent, well to do, a provider or person taken care of—all of these and other situations are judiciously presented in view of the complicated nature of the whole reaction.

Questions, of course, and prognosis, reasons for the behavioristic variability, these and other matters are briefly sketched. A part of the work is occupied with procedure of court reports—expert opinion presentation—which in view of very definite differences in method have little application in the U. S. A. courts.

On the whole a very sensible and useful little book.

Castle, McClung, Detlefson, Slyle, Wells and Guyer. OUR PRESENT KNOWLEDGE OF HEREDITY. [W. B. Saunders & Co., Philadelphia, Pa.]

Under the auspices of the Mayo Foundation and several medical schools of the middle west these lectures were given by the authors named. They represent bits of research work by the respective authors, at the same time they are integrated enough to constitute an excellent present day survey of the field. Thus we have the general problems in the opening lecture, the heredity of sex in a second, the inheritance of acquired characters in a third, and two lectures on heredity and cancer and a final lecture upon eugenics. From the popular point of view the volume is quite readable.

Rivers, W. C. THROUGH A CONSULTING ROOM WINDOW. [Methuen & Co., Ltd., London.]

A series of sprightly essays upon various literary and medical topics chiefly written for the lay reader. The medical reader will enjoy the essays upon physiognomy, the artist and the savage, a glimpse of Henry James and medical women of the future. The essay upon A Medical Portrait or Two is amusing and quite true to life. A neat little volume to slip in the pocket and read on a train or a quiet rainy afternoon.

Lévy-Valensi. PRÉCIS DE PSYCHIATRIE. [J. B. Baillière et Fils, Rue Hautefeuille, Paris.]

We are quite frankly interested in this presentation. For us in the main, French psychiatry has been stagnant for sometime, rather perhaps shall one say groping. There have been those who somewhat tardily frankly took over the Kraepelian conceptions, but in the main little more than isolated psychiatric camps were dotted over the horizon.

Within recent years biological conceptions entered largely into certain French psychiatric literature and it was at one time a dream of Laignel-Lavastine that he would be able to endocrinize psychiatry. This effort apparently died soon after its Dijon announcement. In the main the French system is not advantageous, at least in the large cities where a half day is spent in the wards and the rest of the day in private practice. The synthetic necessities of the German clinics, to our mind, has permitted a more consistent picture. The patients are better known and more consecutively under direct observation.

Notwithstanding this disadvantage, and some others, of organization, French psychiatry is forging ahead and indications are not

wanting of solid achievement. One does not look for much originality in a *Précis*, nor do we find it in the present one, but we do find a conscientious effort to orient the study to the general problems of psychiatry.

Kobrak, Franz. *ERGEBNISSE UND ZIELE OTONEUROLOGISCHER FORSCHUNG.* [Verlag Curt Kabitzsch, Leipzig.]

A short 32 page paper in monograph form which sets forth in a strikingly clear manner the anatomical and physiological principles underlying the clinical neurology of the ear. The author states he does not pretend to rival the chapters in the recently published Marburg and Alexander Handbook of the Neurology of the ear, but he has succeeded in setting forth a very clear résumé of the more outstanding neurootological situations that come into the consulting room.

Pressey, Sidney L. and Pressey, Luella Cole. *MENTAL ABNORMALITY AND DEFICIENCY.* [The Macmillan Company, New York.]

This is entitled an Introduction to the Study of the Problems of Mental Health. They have written it as a college text book that would give in a direct, vigorous, practical fashion acquaintance with the major problems of mental health, mental disease and deficiency. In the second place they have had in mind a book particularly for workers in social service, personnel management, and educational, juvenile delinquent and criminal court fields.

When as the authors state there are more patients in the mental hospitals of the country than there are students in our colleges, and this is but a piquant way of stating a statistical fact, this with many other comparative statistics show the importance of the mentally ill and deficient. Of course, everyone knows that the hospital statistics are cumulative, as it were, but it is high time that intelligent people should be more interested in the brains of the community than in many other parts of the human anatomy.

To train people to recognize the early signs and to point out how mental disease arises; this is the function of this book—and on the whole it does it very well. There is a little too much of the scholastic “normal” and “abnormal” in the book that cracks as an implement when brought into actual use in practical problems, but apart from a certain overspun elaboration of useless psychological details the work is one to be cordially commended especially if it can be checked up by clinical study.

Zeehandelaar, J. *AFFEKTE, PSYCHOTONIE UND AUTONOMES NERVENSYSTEM IN DER PSYCHOTHERAPIE.* [Verlag v. Ferdinand Enke, Stuttgart.]

The number of Monographien, Abhandlungen, Serien, etc., which appear from the German presses is amazing. Any paper longer than two or three forms, 32–48 pages, is printed as a monograph in some one of the score or more “Series.” This is a fortunate thing for

the investigator in Germany. If he has something to say the means for saying it lies at hand. The English student is seriously hampered along these lines. He must rely upon the already crowded periodical of his specialty and must avoid monographic modes of handling his subject matter.

The present small monograph of 55 pages appears as No. 4 of Moll's "Abhandlungen" devoted to Psychotherapy and Medical Psychology. It would accent the importance of the vegetative nervous system in the development of the affects and psychic tonus, as he terms it. The author quotes sympathetically the conceptions advanced by Jelliffe and White in their Textbook and also the work of Kempf particularly since his study upon the autonomic nervous system lies in similar territory. It cannot be said that the present essay goes any further if as far as the authors quoted. He certainly does not link up his psychotherapy with the old nervous system as consistently as do the American authors, nevertheless it is a readable essay.

Woröbiew, W. METHODIK DER UNTERSUCHUNGEN VON NERVEN-ELEMENTEN DES MAKRO- UND MAKRO-MIKROSKOPISCHEN GEBIETES. [Verlag Oscar Rothacker, Berlin.]

Every worker in the macroscopical anatomy of the nervous system will welcome this clearly written, well illustrated book upon this and related subjects. The author here describes methods current and also special ones which he himself has elaborated in the course of a score or more years. Judging from the illustrations there is little question that both for museum demonstration as well as for preliminary preparation for microscopical study the methods here recorded are thoroughly dependable.

Rosenthal, Oscar. WUNDERHEILUNGEN UND AERTLICHE SCHULTZPATRONE IN DER BILDENDEN KUNST. [Verlag F. C. W. Vogel, Leipzig. Mk. 20.]

For those interested, and what physician is not, in the artist's portrayal of the miracles, this work affords a delightful collection. It is one of those beautifully arranged editions of the old masters' treatment chiefly of the Biblical miraculous cures. There are 102 plates from old copper engravings, etchings, paintings, bas reliefs, statutes etc., etc., by Dürer, Raphael, Michaelangelo, Gaddi, Perugino, Giotti, and other old and modern masters from the 13-20 centuries. The plates are well executed and the Biblical, old and new and Apocryphal, texts are given, and a summary list of the artists' saints and others. The neuropsychiatrist is certain to find here marvellous portrayals of emotional attitudes, postures, reproductions of pathological motor states, and a host of details with which he is constantly in contact.

It is a beautiful book and should be in the library of the behaviorist, the psychiatrist, the neurologist, and all interested in the cultural aspects of the healing art.

Collins, Joseph. *THE DOCTOR LOOKS AT BIOGRAPHY.* [Geo. H. Doran Company, New York.]

This is the third collection of Dr. Collins' essays upon medico-literary topics. Here he groups his writings chiefly about biography and autobiography, prefacing his comments with a chapter upon these efforts themselves which is well worth reading.

There are portraits of Mark Twain, Anatole France, Thomas Burke, Keats, Joseph Pulitzer, Damrosch, Duse, Brigham Young, Osler, J. J. Corbett, Lady Hamilton and Mme. Récamier.

The chief body of the book deals with American writers, foreign writers, poets, warriors, editors, clergymen, artists and musicians, actors and actresses, statesmen, educators, prize fighters, fictional biography, miscellaneous and the ladies.

Here certainly one can find much of interest, of diversion and considerable of Dr. Collins, chiefly as to autobiography, the which is not the least of the book's merit.

Dr. Collins' opinions upon things literary, purporting to be those of a neuropsychiatrist, are always of interest, even at times divertingly absurd. He does it quite cleverly, with that tincture of the Celt that has always attracted attention by reason of its keen intuition and its illogical intellectual proclivity. Paradoxes challenge our attention and prejudices jostle our own complexes. Subtle depth suddenly gives way to naïve superficiality but it flows attractively, even if at times it seems to strain after an effect. The poseur at times obtunds the charm but then this is but a little of the autobiography for there is grace and ease as well and not a little real erudition. Certainly there is industry and we welcome and commend this effort from one who was with us if not of us in our efforts to understand and expound the human psyche.

Goldberg, Isaac. *HAVELOCK ELLIS; A BIOGRAPHICAL AND CRITICAL SURVEY.* [Simon and Schuster, New York.]

It is a fortunate circumstance which is but rarely vouchsafed to men that they may live long enough to see their work receive some degree of acclaim, after an early period of villification and hypocritical, prudish misunderstanding. The latter prickly mawkish fruits from moron branches have been pelted at Havelock Ellis for more than two decades but he has come out into the open of a more general praise of which this very interesting book is but one of a number of witnesses.

As the author states he has not written a conventional biography nor a conventional critique but would deal with an appreciation of Ellis which is preëminently aesthetic and humanistic.

The author has given us an expanded picture of what originally was simply a sketch. In its new rounded out form it makes pleasant reading and does justice to its stimulus. It is well worth reading, for the author of the "Dance of Life" is a figure of no small proportions in the world of life and letters, and is of special significance for the students of psychiatry, the science of human behavior.

Jüngling, O., u. Peiper, H. VENTRIKULOGRAPHIE UND MYELOGRAPHIE IN DER DIAGNOSTIK DES ZENTRALNERVENSYSTEMS. [Verlag von Georg Thieme, Leipzig.]

This contribution of approximately 200 large octavo pages with 210 illustrations constitutes the first section of Vol. II of an imposing and important *Ergebnisse der medizinische Strahlenforschung* published by the Thieme Verlag. The authors are surgeons in the University Clinics of Tübingen and Frankfurt, respectively.

Jüngling writes the chapter upon ventriculography in the service of the diagnosis of brain disorders, particularly with reference to brain tumors. It is a complete monograph which takes up the anatomy of the intracerebral spaces with special reference to the physiology of the c.s.f., its circulation and the technique of filling the spaces with gases and the methods of taking the X-rays.

A second section deals with the usual appearances under X-ray study and the variations of disease with and without the introduction of gaseous substances. Hydrocephalus and other deforming processes, symmetrical and asymmetrical filling, etc., are shown in great detail.

A third section deals with the clinical significance of the method.

This is a very fine section, marvelously illustrated and the pictures are well discussed. The second part of the book is written by Peiper and deals with myelographic methods. Both gaseous and solid (iodinized oils) substances are discussed. The cisterna cerebello-medullaris site as preferred is specifically dealt with and iodopin is the preferred liquid.

How great have been the advances in ocular methods of demonstration of both cerebral and spinal lesions and foci can be seen in this volume. It is a beautiful piece of work and is indispensable for those working in the field of neurosurgery.

Fumarola, Gioacchino. DIAGNOSTICA DELLE MALATTIE DEL SISTEMA NERVOSO. PARTE SPECIALE II. MIDOLLO SPINALE. [Casa Editrice Luigi Pozzi, Roma.]

The author, assistant to Professor Mingazzini in the Neurological Clinic at Rome, has already given us an excellent manual of the diseases of the peripheral nerves. The present volume is a continuation of the former and deals with diseases of the spinal cord or spinal cord involvements of general diseases.

It first deals with anatomical and physiological considerations. These are well put, in clear, concise and satisfactory manner, in about 30 pages. Questions of localization of the muscles are then set forth and then the more detailed analysis of spinal cord disorders is taken up. These are grouped nosologically and by tract system involvements. The lateral corticospinal tract, the anterior horns, the spinothalamic tract, etc. Tabes, spastic spinal paralysis, Friedreich's ataxia, and all the familiar syndromes are very clearly portrayed. The progressive muscular dystrophies are ranged with the spinal cord diseases alongside of the spinal and peripheral atrophies. Sec-

ondary diseases, Potts', compression, etc., have a special chapter, as has also conus affections, and the work closes with a discussion of congenital anomalies of the spinal cord and its membranes.

The work is a textbook for students and as such is well done. It is particularly praiseworthy for its clearness and conciseness as well as inclusiveness. Its virtues and faults lie in this same didactic modus.

Périsson, Joseph. LES TROUBLES SYMPATHIQUES DANS L'HÉMIPLÉGIE. [Les Presses Universitaires de France, Paris.]

"The pathology of the sympathetic nervous system is the order of the day"; hence this doctorat thesis of the author who here gives an extremely valuable historical résumé in the opening chapter in which the classical studies of Vulpian are adequately summarized. Following Vulpian up to the present the historical steps are rapidly paced.

The monograph then plunges into its special field, namely, the sympathetic—the author using the word in its old sense—as it is involved in the hemiplegic. A complete discussion is given. Methods of study, objective findings, provoked reactions, reflexes, pharmacodynamic tests, etc., are briefly but clearly entered into. Then follows a series of histories of carefully observed cases of hemiplegics with various vegetative syndromes, special attention being given to the more recent methods of examination. There are 30 of them.

In chapter 4 the author gives a systematic clinical analysis of each of the sympathetic disturbances stressing particularly the opposing aspects of these vegetative nervous system disorders. Interpretations, the pathogeny, and localization problems occupy a further chapter. The whole is completed in a résumé of conclusions and an excellent bibliography.

This is a notable thesis and will be of service for some time to come. Although the literature is vast, systematic studies limited to this specific situation are comparatively few. This makes a sincere and competent work of this kind all the more valuable.

OBITUARY

SAMUEL GILBERT WEBBER

One of the two remaining founders of the American Neurological Association died on December 5, 1926, at the age of 88 of a cerebral hemorrhage. Dr. Rockwell is the sole remaining veteran of this Association which was founded in 1875. At its first meeting Dr. Webber opened the scientific session with a paper on Contributions to the Study of Myelitis, and in the Semi Centennial Volume of the American Neurological Association Dr. Charles K. Mills in his delightful reminiscences of the earlier days of this Association has many interesting things to say of Dr. Webber. Some of these are quoted in Dr. E. W. Taylor's graceful tribute to Dr. Webber's memory. (Archives of Neurology and Psychiatry—March, 1927.)¹

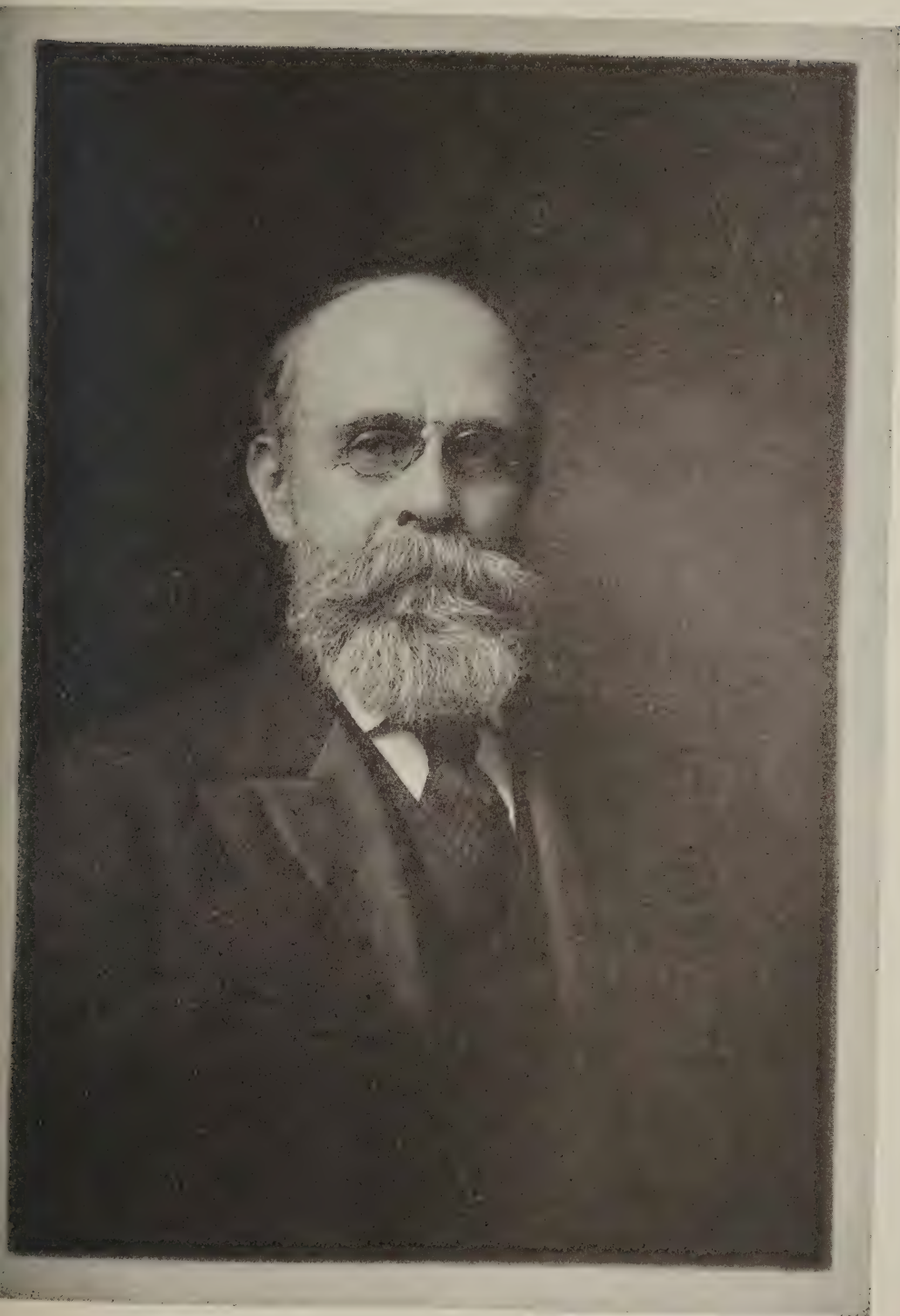
Samuel Gilbert Webber was born on Essex Street, near Chauncy Street, Boston, Mass., July 24, 1838. His father, Aaron Dalton Webber, was born in Rumney, N. H., a lineal descendant of Samuel Webber who was one of the original settlers of Falmouth, now Portland, Me. He was a carpenter and builder, many of his buildings are still standing in the business part of Boston.

His mother was Maria Gilbert, daughter of Samuel Gilbert who founded the firm of Gilbert and Sons, stockbrokers, which bought largely of government bonds during the Civil War.

Dr. Webber went to various private schools, finally finishing his preparation for college at Dixwell's School on Boylston Place, Boston. He entered Harvard in 1856 receiving his A.B. in 1860. That fall he entered the Harvard Medical School and after but two years there, in April or May, 1862, he passed the examination to enter the regular Navy as assistant surgeon, standing number two in a class of fifty-four of whom thirty-five passed. He served in the Navy until April 10, 1865, when his resignation took effect, and he began private practice.

On April 13, 1864, he married in Roxbury, Nancy P. Sturtevant, daughter of Josiah Dunham and Sarah Southworth Sturtevant.

¹ We are indebted to the "Archives" for the cliché of Dr. Webber's portrait.



SAMUEL GILBERT WEBER, M.D.

In September, 1866, Dr. Webber went to Vienna where he made a special study of neurology, in which line he specialized after his return to Boston in 1867. In 1868 he received the Boylston Prize and later was one of the judges for this prize.

He was visiting physician at the Carney Hospital, and at the Boston City Hospital he served for three years from 1869 as pathologist.

At this time he was clinical instructor at Harvard Medical School. While clinical instructor he wrote a book on Nervous Diseases for the use of his students, one of the first of its kind in this country. For nearly eight years he worked in the department of nervous and mental diseases of the Boston City Hospital. Here he saw many patients and had rare clinical facilities.

In 1885 he gave up teaching and became superintendent of the Adams Nervine Asylum near Boston, where he remained until 1891.

From 1893-1902 he was appointed professor of Neurology at the newly founded Tufts Medical School. He spent ten years in this faculty and then gave up all his official activities.

In 1905 he published a Genealogy of the Southworth Family on which he had worked for eight or nine years. He was intensely interested in his work and spent many hours of study on it. He was at one time a S. A. R.

He gave up office practice in 1914 though he did not give up all practice until 1917. He wrote many articles for medical journals besides those given in "Who's Who in America." His bibliography in the Semi Centennial Volume of the American Neurological Association is also quite incomplete.

Dr. Webber was a life member of the Y.M.C.A., and for many years examining physician without monetary compensation for the American Board of Commissioners for Foreign Missions. For many years he was a much loved teacher of a Sunday School Class, many of the members of which are still living. At the time of his death he was a member of Leyden Congregational Church, Brookline, Mass.

He had three children—Maria Gilbert Webber, a craftsman jeweler in Boston; Sarah Southworth Webber, a retired physical director; and Henry Dalton Webber, who died in infancy.

NOTES AND NEWS

ANNOUNCEMENT OF AN INTENSIVE POST-GRADUATE COURSE IN NEUROLOGY AND PSYCHIATRY AT VIENNA, WINTER, 1928

ALTHOUGH post-graduate medical study is very well organized in Vienna, experience has shown that a single man who studied neurology and psychiatry lost much time by waiting until the course he wished to attend was filled or that he had to take private lessons. This made it much more expensive for the single man. On the other hand, it is very easy to arrange an intensive study course for a group of men who come to Vienna at a time determined in advance. Therefore a special systematic course for post-graduate study in neurology and psychiatry will be given entirely in English between January 2d and February 28, 1928, at the Neuro-psychiatric Clinic of Prof. Wagner von Jauregg and the Neurological Institute of Professor Marburg, Vienna University, Austria.

In these two months (fifty days, six hours daily) the whole field of neurology and psychiatry and allied branches (otiatry, ophthalmology, endocrinology, X-rays, brain surgery) will be covered in 300 hours, and time enough will allow for one to enter one or another special courses. Hofr. Professor Wagner and Professor Marburg will take part in the program. The names of the other teachers will be seen in the summary of the course.

The fee will be \$200 for each individual. Applications with a certified bank check to the amount of \$50 enclosed should be sent to Docent Dr. E. Spiegel, Vienna, 1, Falkestr. 3. Applications will be accepted in order of priority. The course will be given to a minimum of ten and a maximum of twenty men. A certificate given by the university can be secured. Write for further information to Privat Docent Dr. Spiegel, Vienna, 1, Falkestr. 3.

Summary of the Topics Covered

Hofr. Professor Wagner, special lecture Psychiatry, 1; Professor Marburg, Pathology of Nervous Diseases, 20; Professor Pappenheim, Clinic of Nervous Diseases, 15; Docent Gerstmann, Clinic of Nervous Diseases, 20; Docent Kogerer, Functional Nervous Diseases, 10; Asst. Dattner, Neurosyphilis, 10; Docent Herrschmann,

Therapy of Organic Nervous Diseases, 10; Professor Stransky, Psychiatry, 20; Professor Schilder, Psychiatry, 15; Professor Schilder, Psychoanalysis, 20; Asst. Kauders, Hypnosis, 10; Docent Spiegel, Vegetative Nervous System, 15; Professor Hafferl, Anatomy of Peripheral Nerves, 10; Docent Spiegel, Anatomy of the Central Nervous System, 30, Physiopathology of the Central Nervous System, 20; Professor Alexander, Functional Hearing, Labyrinth Tests, 15; Asst. Kestenbaum u. Sommer, Neurology of the Eye, 20; Professor Schüller and Doctor Sgalitzer, X-rays, 10; Professor Bauer, Endocrinology, 15; Asst. Adolf, Liquor Tests, 5; Docent Schönbauer, Brain Surgery, 5; Demonstrator Alexander, Laboratory Technic, 5.

THE international meeting of epileptologists to have been held in August has been postponed. Further notice will appear.

THE alienists and neurologists of French speaking countries will hold their annual meeting at Blois, August 24-26.

THE International Psychoanalytic Congress will be held at Innsborich, September 1.

THE German psychiatrists and neurologists will met at Vienna, September 13-18.

N. B.—All business communications should be made to *Journal of Nervous and Mental Disease*, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

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ORIGINAL ARTICLES

INTERPRETATION IN NEUROPATHOLOGY

By A. E. TAFT, M.D.

PHILADELPHIA, PA.

The general concept in neuropathology is a morphological one. Much painstaking work has been done by many investigators, using a variety of fixatives, and various selective stains.

Everyone who has done exhaustive work with the customary methods, soon or late arrives at the recognition of certain limitations of these methods, and the results which they yield. Nissl and Alzheimer, both masters in the field of neuropathology, were seeking to widen the scope of their studies some years before their work was ended. Nissl concluded, after years of study, that pathologico-anatomical descriptions of the psychoses not only did not characterize a definite form of psychosis, but did not even offer the possibility of judging whether the subject had a mental disorder or not. (1)

Alzheimer wrote, "One repeatedly sees patients die with the appearance of the most severe cortical disease, or develop unrecoverable deterioration, without being able to find, by anatomical examination, anything to explain such an outcome. This proves that we are only at the beginning of the pathological anatomy of mental disorders. Pathological changes are, of course, present in such brains, but the same changes are to be found also in the brains of every mental case which has suffered only mild mental disturbance. What we lack, therefore, is the ability to recognize the significance of the pathological value of individual changes." (2)

Spielmeyer feels that the limitations of neuropathology are not hopeless, and that histochemical analysis should yield results. (3)

We find recent definite expression in the literature, as voiced

by Orton, who says, "There are probable alterations in structure, also, which may remain undemonstrable by microscopic methods. . . . Finally, I think it safe to say that the problem has not been exhausted even by the methods available to-day." (4)

Psychology seeks to make this state of things a stepping stone for its own wider significance, when McDougall says, "In spite of immense industry devoted to investigation of the brain; the cutting of sections, and the staining methods of Golgi and Weigert, and a host of others, it had begun to be realized that psychiatry and neurology were making no progress proportionate to the effort directed along these lines." (5)

As though in response to this, though in reality anticipating it in point of time, appears the following: "For psychiatry, as a branch of practical medicine, which seeks a scientific explanation of pathological processes in mental disorder, and active therapeutic action in the course of these processes, psychological investigations have only a limited significance." (6)

The outlook may not be as restricted as it appears. Fully a decade ago, the writer was talking over a projected piece of work on brain pathology with a physician of broad mind and wide experience both in clinical and laboratory medicine. The advice received at that time was, that the next piece of work should be on hydrogen ionization in relation to the brain.

It is Lillie's opinion that, "A chief difficulty has been that most histological investigators seem to have conceived of protoplasmic structure as existing independently of the chemical and physiological activities of the living system, and not as both dependent upon and determining these activities." (7)

Physicochemical studies on the central nervous system are limited in number. The growing importance of this viewpoint is indicated by the fact that only twelve columns of titles appeared under Colloids in the Decennial Index of Chemical Abstracts from 1907-1916, while the same index for 1922 alone contains five columns. (8)

In 1914 Justschenko wrote, "The new way for investigating the nature of pathological processes which are accompanied by mental disorder, is the way of biochemical and physicochemical research."

The scientific foundation of modern colloidal chemistry was laid by Thomas Graham, F.R.S., in 1861. Since that time it has been the subject of extensive experimental investigation, and has come to have a wide practical application. Its recognition in the field of industry has proven its importance. Its biological significance is indicated in the expression of Loeb, that "We have to remember that

all life phenomena are ultimately due to motions or changes occurring in colloidal substances," (9) and of Ostwald, that all life processes take place in a colloidal system. "The different processes called vital are only the physicochemical phenomena which appear in all colloids." (10)

The contribution of colloidal chemistry to medical science is easily recognized if one realizes that the greater part of the tests of clinical pathology are founded upon its principles.

A detailed consideration of the colloid nature of body fluids and the reactions involved was given by Joël in 1923. Even earlier, in 1913, Justschenko worked at length on the same subject in its relation to mental diseases. (12) In 1923, Lumiere applied the colloidal theory to life and disease. (13)

In therapeutics, its application is seen in the use of vaccines, all forms of serum therapy (salvarsan, etc.) and similar means of treatment.

Physicochemistry has revealed a great deal concerning the ultra-microscopic state of matter. Pasteur recognized the existence and importance of the "*infiniment petit*" in biological study. Meaning by this, whatever was unseen by the use of the direct microscope. (14) This branch of chemistry deals with matter in the fluid and the semisolid states. These two states are characterized as sols and gels. In the former, minute particles float in a liquid medium. In the latter, the liquid appears as finely divided droplets in the semi-solid medium. By means of the arc light, with the ultramicroscope, particles 0.01 micron in diameter can be seen. In employing summer sunlight, particles of even 0.003 microns may be seen.

A clear picture is given by Seifriz: "Living protoplasm, viewed through the microscope, presents the picture of a heterogeneous suspension of minute granules and larger liquid droplets. If we assume the smaller particles to be liquid in nature, as are the larger globules, then the suspension becomes an emulsion throughout. This microscopic picture may well have its counterpart in the realm of ultra-microscopic dimensions of the living substance. These facts have been the basis of the wide acceptance of the emulsion hypothesis of protoplasmic structure." (15)

All the proteins of the body are in a colloidal state. In close relation with them are the lipoids, which are of great importance from the biochemical standpoint. Lillie says: "The experimental studies and observations of the last twenty years have led more and more to the conclusion that the general or fundamental structure of protoplasm corresponds more closely to that of an emulsion than

to that of any other simple nonliving system. . . . Water-insoluble constituents (lipoids) occur in association with colloidal constituents which have water-combining powers (proteins)." (16) Lepeschkin regards protoplasm as a loose combination of proteins and lipoids, which breaks down under lethal conditions (coagulation). (17) Less extreme changes take place, due to alteration of hydrogen ionization, presence or absence of electrolytes, and the valence of those present, as well as the variations in electrical charge and conductivity. (18)

The importance of hydrogen ionization is indicated by the fact that in normal blood, the pH is 7.4, and that a pH of 7.2 indicates an advanced acid intoxication. . . . Every abnormal excess of H or OH ions influences the condition of swelling in the tissues and may thus give rise to grave disturbances. (19)

The electrical properties of protoplasm, when demonstrated on annelids, shows that "the animal typically extends and lengthens when the head is toward the cathode, but shortens when the current is in the opposite direction." (20) In making studies along similar lines on the larvae of *Amblystoma*, Loeb found peculiar changes in the posture of the animals. If the current passed through them longitudinally from head to tail, the back became convex, and the ventral side concave. On the other hand, if the current went through the animal from tail to head, both head and tail were raised. The body became more concave on the dorsal side and convex on the ventral side. He explains this as follows: "The current has two kinds of effects. A conduction current takes place through ions. Wherever the progress of ions is blocked in the central nervous system, an increase in their concentration will occur and this must be followed by physical or chemical alterations in the colloids. . . . Wherever anions are blocked different effects will be produced than at places where the progress of cations is blocked." (21) When placed between electrodes, bacteria, spermatozoa, yeast cells and red and white blood corpuscles migrate to the anode, while amebæ move to the cathode. (22) "Hydrophile organic colloids pass in no definite direction when in an electric field; they acquire a definite direction only by the addition of electrolytes. OH ions cause an anodal, H ions a cathodal migration." (23) Almost all substances entering into the constitution of the human body are electronegative, *i.e.*, they migrate toward the positive pole. Only hemoglobin is electropositive. (23)

The electrical conductivity of protoplasm has already been utilized in a variety of ways, and particularly in relation to new growths.

Lewis writes of his experience with electrical phenomena in malignant growths, as follows: "Cancerous tissue has a higher electrical conductivity than normal tissues under the same conditions. . . . Electrical conductivity depends upon the presence and movement of electrically charged ions." (24)

Bechhold finds that there are increasing indications that colloid investigation is destined to carry nearer to solution the problem of nerve irritability. With a galvanometer, the action current in the nerve may be measured. These phenomena are arrested as soon as the nerve is narcotized. Nerves lose their irritability when placed in isotonic solutions of cane sugar or other nonconductors, but recover it again when placed in physiological salt solution. (25)

The foregoing is intended to serve only as an introduction to the actual theme under consideration; an attempt to understand the meaning of histological appearances.

The active application of the principles of physicochemistry to the study of brain pathology is restricted to the work of but a few investigators. The most outstanding studies in this relation are to be found in the work of Marinesco. Beginning in 1910, numerous observations have been made on nerve tissue, using chiefly isolated nerve cells from the posterior root ganglia, and also fibers of peripheral nerves. Based on his findings, he has sought to interpret the appearance of tissue morphology, and further to explain the alterations of function in some mental and nervous disorders.

Justschenko (26) emphasizes what all neuropathologists realize, that the anatomist cannot examine a brain which has suffered only mental disorder, but that it has also sustained other serious processes, as agony, death and accompanying changes.

It is with all these conditions in mind that Marinesco has sought by experiment and with the aid of the ultramicroscope, to show the fundamental processes underlying morphology.

In studying fresh ganglion cells in normal serum of the animal, he found the protoplasm to be granular, the luminosity depending upon the size of the granules. Neither Nissl bodies nor neurofibrils were visible in these living cells, nor was there any amoeboid movement of the protoplasm. He writes: "By employing different methods, such as the ultramicroscope, intravital staining, that of oxydase, and even direct observation, we are unable to demonstrate the presence of Nissl granules in living cells. But if we make use of the precipitating action of certain staining agents, or if we treat fresh cells with bivalent metals or acids, we instantly see the Nissl granules appear. As acids are characterized by the H-ion, and

living colloids are electronegative, one can well understand the precipitation of colloid granules. From the moment that it has been proven that there are no Nissl bodies, which are simply the product of precipitation of colloid granules, it is evident that chromatolysis is an artefact, and that the absence of chromatophilic elements in the center of the cell must have a biological significance. Some time ago, I explained this apparent phenomenon called chromatolysis, by the modification of the reaction of the intracellular substance. I reasoned that what had been called chromatolysis is a chemical disintegration of colloid particles." (27)

Soula's very important researches support these opinions, for their author in his study of the azotic metabolism of nerve centers, has been able to determine that chromatolysis represents, actually, a phenomenon of proteolysis.(28)

Experiments made by Mott on the meaning of Nissl granules, led him to the same conclusions as those reached by Marinesco.(29)

Of intracellular neurofibrils, Marinesco says: "The condition of a neurofibril after fixation cannot be the same as in the living state. Their consistence is that of a fluid gel which does not contain ultramicroscopic granules, on which temperature exercises an influence. Cold produces transitory gelification, as does also metallic impregnations. In the living cell they are invisible and so must have the same refractive index as the hyaloplasm; a viscous, homogeneous gel." (30)

The actions of acids and alkalis were also studied. They bring about relatively opposite results. Isotonic KOH produces almost instantaneous cell dissolution. Na and Br are slower in their action, but are similar. Brownian movement could be studied during this less rapid change, following dilution of the cytoplasm.(31)

In the cells placed in NaCl and then changed to distilled water, large granules appeared in the protoplasm, which were well disseminated, but without Brownian movement.(32)

When acetic acid is added to the cell suspension, there is agglomeration of colloidal particles. Nissl granules are seen. The nucleus is homogeneous or demi-luminous; the nucleolus is visible by contour, and the nuclei of satellite cells are granular and strongly luminous. (33)

The effect of HCl is quite different. There is only a tendency to agglomeration of granules after half an hour. The nucleus becomes very luminous from precipitation of granules, and it retracts, leaving a perinuclear space.(34) (This is often seen in stained sections.)

On adding CaCl_2 , there is precipitation with acute coagulation in

protoplasm and karyoplasm, and this is greater in degree at the periphery than at the center.(35)

In examining fresh tissue, it was easy to see with the ultramicroscope that the cytoplasm of all cells contained extremely small granules in suspension. The degree of dispersion and optic properties varied not only between one nerve center and another, but also in different species of cells. The nuance of color varied with the size and type of cell.(36)

A suspension of ganglion cells was placed in the autoclave at 38°. Coagulation with precipitation of granules occurred, with augmentation of luminosity. At the end of 22 hours, angular granules were present in the perinuclear region. These granules were insoluble in KOH and NaOH, but were dissolved by chloroform and ether, which identified them as lipoids. They were found only rarely in many experiments.(39)

Pigments in nerve cells were studied by similar methods in an effort to determine whether they are a product of autolysis. About this there has been a difference of opinion. Cells were studied from spinal ganglia, the *locus niger* and the Ammon's horn. The tonality varies with the region from which the cells come, the species of cell, and the age of the subject. They resisted the action of the solvents used, but were considered lipoids, as they stained with scharlach R. Concerning this, Marinesco says: "Since 1912, I have affirmed that the pigment in nerve cells is a product of autolysis. In reality, by its optic and chemical properties, the pigment in nerve cells resembles the granules found in ganglion cells in aseptic autolysis. Biondi has confirmed my findings by well conducted researches." (40)

The effects of fixatives were also investigated. The greater part of the substances which exist in the cell are found in a colloidal state. They are chiefly albuminoid substances, together with lipoids and carbohydrates.(41) He suggests, therefore, that our actual knowledge of nerve cells should be revised by means of their study in the light of the newer contributions of their colloidal properties.

Cutaneous nerves from frogs were immersed in anesthetic agents, as cocaine, stovaine, scopolamine and morphine; also chloroform and ether. With cocaine, the fibers became sinuous, with swelling of myelin, rings and excrescences. The degree of change varied directly with the dilution. After a time, granules were seen and Brownian movement was present.(42)

When chloroform was used, there was swelling of myelin with the appearance of granules. The axone was found inactive and shrunken, and covered with nonmotile granules. The effect of ether differs

from other reagents used. A fine granulation of myelin was produced.(43)

Further experiments were tried on nerve fibers subjected to ammonia, distilled water, glycerine and alcohol. The first two reagents produced similar changes. These were seen in swelling and in incomplete segmentation of myelin, and mobile colloid granules, and filaments which appeared to be oscillating.(44)

Alcohol and glycerine, though similar, presented points of difference. With alcohol, there was dispersion of myelin, varying with the concentration of the alcohol, which was uniform in all parts of the fiber. This was accompanied by retraction of the axone.(45)

Further concerning nerve fibers, he says: "I believe that the cell of origin of the nerve fiber going to a muscle, regulates by its activity, the acid-base equilibrium of the nerve and muscle fibers. This is a new conception conforming to facts observed in Wallerian degeneration, and in autolysis, *in vitro*. . . . Myelin, as well as the axone represents a homogeneous gel, but each forms two heterogeneous systems distinguished by their chemical and colloidal structures. . . . The regressive phenomena which take place in these two gels are physical at the beginning of Wallerian degeneration. . . . Then appear chemical changes; the saponification of myelin . . . and the proteolysis of the axone. This has also been studied by Mott and Halliburton." (46)

Two methods for study are commended: 1. By means of the ultramicroscope, and 2. By the chromatic reactions offered by living nerve cells treated by different dyes. The latter represents the histochemical reactions suggested by Spielmeyer.

Age is an important factor in protoplasmic reactions. Marinesco compared the effect of various substances upon suspensions of cells from new-born and adult dogs. The former are very sensitive and respond more quickly and in a much more extreme degree than the latter.(47)

All colloids, organic and inorganic, have a vital curve, and therefore follow a fixed trajectory more or less analogous to living elements. Recent researches of Samec show that the ageing of colloids is a process of dehydration of colloid granules; their agglomeration is followed by precipitation and even commencement of agglutination.(48)

Zsigmondy and Bachman have observed that, in sodium palmitate, the dispersion of granules diminishes with age. Recent gelification presents a crystalline form, while old preparations appear fibrous. The curve of animal cells should follow the same law.(49)

These results of studies on living cells point out the importance of

a careful interpretation of morphological findings as seen in fixed and stained specimens.

That colloidal granules can be stained during the vital period is doubtful. The writer arrived at this conclusion after repeated trials without success. It seemed probable that "vital staining" is not a true staining of albuminous material, but coloring by solution of the dye in the intra-micellar fluid medium. This explanation has also been brought forward by Lumière. True staining can take place, in all probability, only after protein coagulation, which means in a devitalized state.

"It has long been known that the materials forming cells and animal tissues, as well as the circulating or interstitial fluids which impregnate them, consist principally of protein,—a complex substance. We shall see that these same colloidal properties explain in a striking manner the genesis of pathological conditions which have remained completely enigmatic for centuries." (50)

"Doubtless, the method of microscopic serial sections stained by Marchi, Pal and Weigert, in the hands of the founders of modern neurology, has given information of the greatest value. . . . To-day, the anatomy and physiology of the nervous system still find in pathological anatomy, the greatest part of their information, and the neurological clinic its most firm support. If the methods of purely static morphology are still necessary for the determination of a new disease entity, to determine an unfamiliar symptomatic picture, it is certain that they occupy only a limited place in the interests of the younger generation which is entering neurology. A reading of our reports suffices to prove this. But side by side with this static anatomy, to which some of us have remained faithful, there is to-day a new pathological anatomy which is dynamic, the echoes of which have not failed to make themselves heard in the domain of neurology. The study of the living tissues by means of the ultramicroscope, by those of cultures *in vitro*, and those of vital and post-vital staining, have come to modify altogether our processes of observation. . . . Also, the perfecting of histochemical methods has led Marinesco to emphasize the value of the oxydizing ferments. . . ." (Roussy, M. G., *Revue Neurologique*, Jan., 1927, p. 54.)

Pinel wrote that it is important in medicine to approach the truth by means of natural science, and to choose for study those things which are least clear, and surrounded by the greatest doubt. (51)

Speaking recently, Harvey Cushing said, "The customs and interests of pathology go in waves from period to period and the pathology that most of us in our generation have been engaged in, may in another fifty years be old-fashioned." (52)

"A time will come when the old physiological chemistry and the new chemistry of the biocolloids will meet and the two opposite ends of the tunnel will be united." (53)

"Colloid chemistry comes, not to destroy, but to fulfil. It does not destroy or even replace the known facts of chemistry, physics, and other sciences, but it draws attention to certain aspects of Nature which have often been overlooked." (54)

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THE INTRAVENTRICULAR TREATMENT OF PARESIS

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It is well known that the intravenous injection of salvarsan whatever the quantities used and the length of the treatment is incapable of materially improving general paresis. The introduction of the same drug into the subarachnoid spaces has given no satisfactory results.

In the course of late years certain observers thought of seriously improving the paretic by introducing salvarsan into the cerebral ventricles. Numerous observations have been published which give the possibility of appreciating the results of this medication. Besides, a great number of new works have utterly modified the usual ideas on the circulation of the cerebrospinal fluid. Thus, it is possible to study the intraventricular treatment of general paresis on an experimental and clinical basis. Such is the aim of the present paper.

I. SUMMARY OF THE LITERATURE ON THE QUESTION

Before discussing the observations of the American and English observers, we think fit to sum up rapidly the works of the same observers concerning the circulation of the cerebrospinal fluid and the absorption of foreign substances introduced into the cerebral ventricles.

A. Course of the cerebrospinal fluid

It is quite certain that the source of the fluid which fills the ventricles and the subarachnoid spaces is the epithelium of the choroid plexuses and perhaps of the ependymal cells. The histologic works of Euzieres and Grynfeldt, the experiments of Dandy, Weed and Thomas on experimental hydrocephalus are an irrefutable proof of these facts.

The course of cerebrospinal fluid is known in a no less precise way. Dandy (1), in an important work, has well summed up the question and has given a very explicit and demonstrative scheme. We have ourselves noticed these notions in man.

Here are the striking points of these studies: The fluid secreted by the choroid plexuses fills the cerebral ventricles (ventricular

fluid); it passes from the ventricles into the subarachnoid spaces, through Luschka's foramina and gathers in the great cerebello-medullaris cisterna, a vast reservoir which communicates with the subarachnoid spaces of the cord and the great lacunæ of the base of the brain; cisterna pontis and interpeduncularis cisterna and chiasmatic cisterna.

These different parts deserve well the name of reservoirs, for they are constantly filled with a fluid easy to puncture. From the interchiasmatic and interpeduncularis cisterna, the fluid passes at the level of the convexity of the brain by following the great Rolando and Sylvius' sulci.

But, apart from these great sulci and their principal dependencies, the quantity of fluid which bathes the surface of the brain is quite small especially at the level of the frontal and occipital lobes.

The fluid is finally almost entirely absorbed by the venous system. But here begins variance among the observers. Dandy and Blackfan (2), using the intraärachnoidal and intraventricular injections of phenolsulfophthalein, think that the fluid is absorbed in man by all the veins of the subarachnoid spaces and this absorption is possible in any point of these spaces.

Frazier and Peet (3) agree with the preceding observers.

Weed (4), in a series of remarkable works which are worth being read entirely, has arrived at different and extremely important conclusions. His technic is the following: injection of iron ammonium citrate and potassium ferrocyanide into a given part of the meninges; this drug is mixed with the spinal fluid, the course of which it follows. Then the brain and its meninges are dipped into formalin and hydrochloric acid; the formalin fixes the tissue and the acid precipitates the iron salt which might have been fixed during the life into the cells, veins, etc.

Here are a few of the very important conclusions of Weed. The absorption of the iron salt does not take place at the level of any vein of the subarachnoidal spaces. The great sinus performs this absorption by means of precise anatomical formation; the arachnoid villi; which cause the subarachnoidal spaces to communicate with the sinus.

Anyhow, one fact is certain: a foreign substance, a drug mixed with the spinal fluid introduced into the cerebral ventricles follows the course of the ventricular fluid; it bathes the walls of the ventricle, the cerebello-medullaris cisterna and the subarachnoidal spaces of the cerebral basis; it reaches the surface of the hind-brain and of the hemispheric convexity at least at certain points.

A part of this foreign substance will be necessarily absorbed by the veins; veins of the subarachnoidal spaces, great sinuses and will remain without any therapeutic effect.

Besides, Nanagas (5), Cestan, Riser et Laborde (6) have demonstrated that an important absorption took place at the level of the veins which lie under the ependymal epithelium of the ventricles.

(b) Another essential problem must be now considered: Does a foreign substance, a drug introduced into the cerebral ventricles and having reached the cerebral surface, penetrate into the parenchym and reach the nerve cells? This is the essential condition of the efficacy of this drug.

A certain number of observers think that the nerve cells are in relation with the cerebral fluid. That fluid would flow within the lymphatic spaces which are situated around the vessels and plunge into the nerve substance; now these perivascular lymphatic spaces would communicate with the space which surrounds the nervous cells. Mott (7), Dixon and Halliburton (8), Weed (4), Goldmann (9) have attested the same fact. Having injected Trypan blue into the cerebral subarachnoid spaces, he has always dyed the pyramidal cells and Purkinje's cells.

In a series of very important works, Stern (10) arrives at the following conclusion: The ventricular fluid is a nutritious fluid; it penetrates into the parenchym of the brain, and is in close connection with the nerve cells. This opinion has been illustrated by Von Monakow (11) by a very expressive scheme in which one may see the ventricular fluid passing right through the nerve substance, bathing it and being in close connection with the cells; thence the fluid reaches the perivascular spaces and the veins in which a more or less rapid absorption takes place.

These very important works were worth a practical conclusion; the treatment of general paralysis by the arsphenamin introduced into the ventricles; the ideas of the observers who proposed this therapy was that the drug was to bathe the nerve cells, which could not be reached by the intravenous injection.

(c) Here is the summary of the principal clinical works which have been made on the matter:

Hammond, Sharp, Smith (12) treated thirteen patients ill with general paresis by this method (two to four intraventricular injections of arsphenamin at an interval of eight or ten days). Here are the most interesting statements which these observers have made. The treatment does not suppress the Wassermann's reaction, which has been six times positive into the ventricular fluid; the number of

cells remains unchanged. As regards the clinical point of view, the shaking and the difficulty of speech always disappear. Five patients exceptionally improved.

Sharpe (13), fourteen days after an intraventricular injection of salvarsanized serum in a patient ill with general paresis, saw the number of cells of the ventricular fluid fall from 220 to 15. In another patient, who received three injections within forty days, the spinal fluid at first much altered became normal, the clinical improvement was evident.

Campbell (14) treated without success a patient ill with the tabes with optic neuritis.

Campbell and Ballance (15) used the serum of the patient mixed with salvarsan and injected it into the ventricle (fifty centimeters cubes of the serum include nine milligrammes of salvarsan). A patient treated in 1914 was much improved and remained in the same condition until 1919.

Sands (16) injected only one intraventricular injection into a patient who died shortly after. It was noticed that the lesions were much less important on the side which had been injected.

Knapp (17) also used the intraventricular salvarsanized serum for two patients completely insane; he got a wonderful result since in both cases; Argyll's symptom disappeared, a fact which had never been noticed before.

Skoog and Menninger (18) studied the results of the intraventricular treatment in sixteen patients ill with syphilis of the brain. They injected 60 centigrammes of arsphenamin into the patient; half an hour after they collected 50 centimeters cubes of blood; different quantities of salvarsanized serum were introduced into the ventricles (ten to twenty centimeters cubes) after having taken a greater quantity of ventricular fluid. One of the patients showing some pupillar symptoms without Argyll's symptom and hallucinations refused to go on with the treatment, having been persuaded that he was no more ill. The extremely violent headache of a patient ill with the tabes disappeared after four injections (observation V). An insane patient, ill with congenital syphilis, was considerably improved after four injections (observation X). In a patient ill with hemiplegia the clonus disappeared and he could walk better. Only one case of death can be attributed to the treatment.

To sum up, the preceding observers think that a drug introduced into the cerebral ventricle and mixed with the ventricular fluid reaches with it the nervous cells. In the nervous cells the intraventricular

injections of arsphenamin can cause very important improvements when the intravenous injections have given no efficacious results.

II. PERSONAL RESEARCHES

In the account of our personal works we shall use the same plan as that which we have used before.

(a) *Course of the cerebrospinal fluid*

We offer no new idea as regards the intraventricular source of the fluid and its escape through Luschka's foramina.

It is the same with the distribution of the cerebrospinal fluid into the cisternas of the basis of the brain and of the subarachnoidal spaces of the convexity. We adopt without any change Dandy's technic of which we have already spoken. Thus we think certain that, in man, a drug introduced into the ventricle and mixed with the ventricular fluid reaches the inferior side of the hind-brain, bathes the basis of the brain, and can even reach the convexity of the cerebral hemispheres and particularly the convolutions which lie close to the great sulci. *But in the whole course the drug is partly absorbed rapidly enough by the small vessels, veins and capillaries.* Let us insist upon this very important point. We have showed that in man the vessels lying under the ependymal epithelium, and particularly the veins of the choroid plexuses, undeniably absorbed the foreign substances introduced into the ventricles (Cestan, Riser, Laborde (19).

In a dying epileptic, insane, having been trepanned several years before in the occipito-temporal part, an intraventricular injection of ten cubic centimeters of the following solution was made: iron ammonium citrate and potassium ferrocyanid after drawing off 10 c.c. of ventricular fluid; the patient survived six hours. Immediately after his death all the cerebrospinal fluid was withdrawn and replaced by a mixture of formalin and hydrochloric acid. *The formalin fixes the nervous tissue and the iron salt is precipitated in the parts which have absorbed it, under the shape of blue granules. Microscopic and serial sections of the brain were made and here are the capital statements that this unique case has allowed us to make: The walls of the lateral ventricles, which have been injected, of the third and fourth ventricles are greatly impregnated with the precipitated iron granules, but only within the depth of one or two millimeters; the septum lucidum, the corpus callosum, are impregnated within the depth of two millimeters. The iron granules are set without any

order in the parenchym; but the wall of the small veins and of the capillaries crossing the nervous substance which lies close to the ventricular cavities is stuffed with iron salt and some of the iron granules have even penetrated into the inner part of the vessels. At the surface of the thalamus, around the trigon, the presence of about ten veins (Galen's veins being understood) is noticed, and their walls



Figure I. Man—Subarachnoidal spaces and brain, F.A. five hours after an intraventricular injection of iron salt, the latter has been precipitated after the death in the shape of Prussian-blue granules (greatly enlarged in the picture). These granules are scattered in the subarachnoidal spaces (E); they are numerous in the wall of the veins (V); they are to be found in the pia mater and in the walls of intraparenchymatous vessels (VI) and have too penetrated into the nervous tissue, but not very deeply. L, a group of leucocytes. A, a small artery whose walls do not contain any trace of iron salt.

are stuffed with iron granules. The vasa vasorum of Galen's large veins are markedly impregnated.

Thus it is beyond doubt that a rather considerable part of a drug introduced into the ventricles is directly absorbed by the ventricular veins.

But that is not all; in the same patient we have studied the sub-arachnoidal spaces of the hind-brain (inferior part of the hemispheres) and of the convexity of the brain. We have witnessed a very important phenomenon: *The absorption of the iron salt by all the veins of the subarachnoidal spaces and of the superficial nervous substance. The microscopic section shows that the precipitated iron granules are particularly numerous around the small veins; they permeate them and are condensed under the endothelium; they are even found in the lumen of the small vessels.* (Fig. 1)

These very precise statements quite confirm Dandy's and Blackfan's notions; these observers, as we have seen, think that the elimination of the dyed stuffs introduced into the subarachnoidal spaces is not only made by the arachnoidal villi (weed), but also by all the small vessels of the meninges.

To sum up, one ought to take notice of this absorption by the ventricular and meningeal vessels, which seems to be very important, since in six hours more than 50 per cent of the iron salt has been absorbed in the above observation.

(b) *Relation of the cerebrospinal fluid with the nervous cells*

This is really the most interesting point of our researches, the one which we have more particularly studied. If we allow that a drug mixed with the cerebrospinal fluid reaches and bathes the nervous cells, we give the subarachnoidal therapeutic a strong basis and we can expect the cure of a lot of nervous diseases. On the contrary, if we prove that there is no relation between the nervous cells and the cerebrospinal fluid, it is useless to look forward in that direction for the cure of general paresis or encephalitis.

Here is a summary of our principal statements in man referring to the preceding case: six hours after the intraventricular injection of the iron salt, one sees on microscopical sections concerning the thalamus which lies close to the lateral ventricle, that the iron salt has well penetrated into the nervous tissue, but only within the depth of one or two millimeters. The iron granules take no systematic disposition as regards the nervous cells; they are no more numerous around the cells in this real space which separates them from the rest of the nervous tissue; those granules are not to be found within the cells.

As we have said, the iron salt injected into the ventricle reaches the cerebello-medullar cisterna and permeates the subarachnoidal spaces lying close to the inferior part of the hind-brain. The surface of this organ is dyed in blue after the action of the ferrocyanide

acid; the microscopical sections of the gray matter of the hind-brain enable us to study the penetration of the iron salt into the parenchym and its relations with Purkinje's great cells. The superficial nervous tissue is only impregnated within a small depth: 1.5 to 2.5 millimeters, in the part of tangential strings. The perivascular channels are dyed by the iron salt to a far more considerable depth: 5 to 10 millimeters; but we insist upon the fact that Purkinje's cells remain unchanged; the best microscopical objectives are unable to show the least quantity of iron granules not only in their protoplasm but also in the pericellular spaces.

The same statements are to be made at the level of the frontal lobes. Let us study, for instance, the circumvolution of motility F.A., in the case we are studying; the iron salt introduced into the ventricle had not only reached the cerebellar subarachnoid spaces, but also the spaces which cover F.A. This circumvolution itself was studied on serial sections, including also the subarachnoidal spaces; the latter were impregnated with iron salt; the nervous tissue itself was impregnated by the iron salt within a very small depth: 0.5 to 1.5 millimeters. The iron salt precipitated in the shape of prussian blue granules is to be found in the interstitial tissue of neuroglia and among the tangential strings. Some granules are joined to the cells of the part of the tangential strings. But as we go further down the iron granules become more and more rare and they have entirely disappeared in the part of the great pyramidal cells. Even the most superficial cells include iron granules, but very rarely; it is exceptional to find the iron granules in the pericellular spaces. (Fig. 2)

In fine, in man, an unpoisonous foreign substance being not attracted by the nervous cells, being an isotonic solution, and having the possibility of being mixed with the cerebrospinal fluid, and introduced in a sufficient quantity into the cerebral ventricles reaches the cerebello-medullar cistern. It spreads slowly into the meshes of the subarachnoidal spaces, which are quite impregnated; it is absorbed in a short time by all the small meningo-cortical veins, and not by the arachnoidal villi only. *This foreign substance penetrates the nervous tissue to an excessively small depth and sometimes more deeply by following the perivascular channels. But these channels do not communicate at all with the pericellular spaces and the latter are not reached by the foreign substance; the nervous cells at the depth of one millimeter may be sometimes reached, but there is not the least attraction.*

We feel quite certain that the ventricular fluid does not play any nutritious part, that it does not penetrate through the bulk of the

cerebral parenchym towards the superficial cells. We think we have thus shown that in man, the cerebrospinal fluid fills the meshes of the subarachnoidal spaces, fills also the perivascular channels, and penetrates with them into the depth of the nervous tissue. *But these perivascular spaces do not themselves communicate at all with the nervous cells, in physiologic conditions at least.*

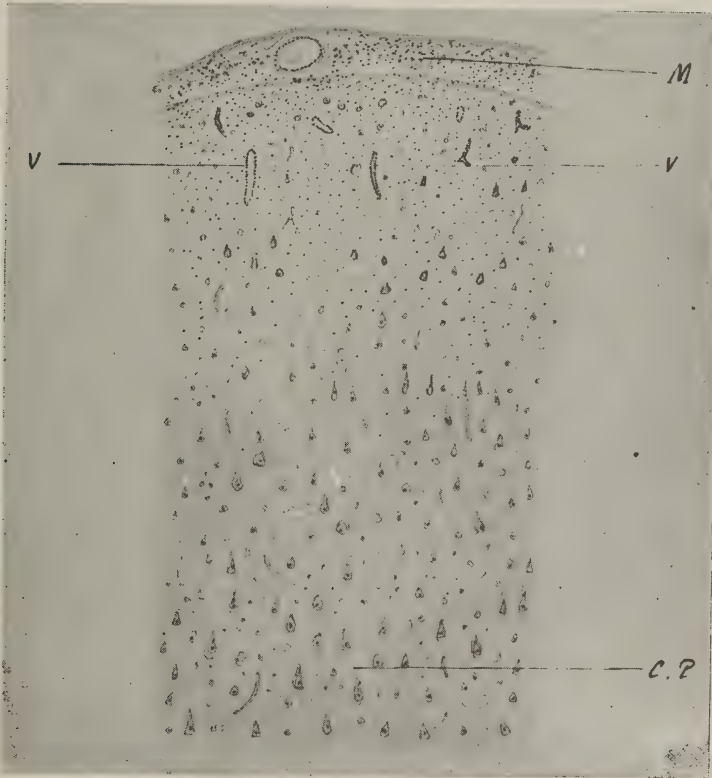


Figure II. Same case, same section enlarged. Numerous granules scattered without any order among the most superficial cells of the brain. As we examine deeper parts of the preparation the granules diminish in number. There is not a single one in the zone of the great pyramidal cells. No iron salt in the pericellular spaces which have no communication with the subarachnoidal spaces.

In man, the same statements have been made in two cases on the cord cut into serial sections. In spite of the injection into the lumbar subarachnoidal spaces of fifteen centimeters cubes of iron salt, the cells of the anterior horns of the cord were quite unchanged and

had not been reached by the iron solution (Cestan, Riser et Laborde (29)).

In fine, it does not appear to us that the intra-arachnoidal injection of a drug can reach the cells of the nervous tissue as soon as they are situated a little deeper (these conclusions can only apply to the substances which have no particular affinity with the nervous cells).

The experimental researches we have made and of which we have just given the conclusions did not seem to make good the optimism of some observers who had praised the intraventricular treatment.

Still, we have tried this therapeutic in several patients ill with general paresis. *Here is the summary of our observations:*

Observation I. Woman, aged fifty-two, offering symptoms of typical paresis which seems to have begun three years ago; complete dementia, loss of memory, disorientation, incoherent and grandiose ideas, trembling hands and tongue.

(a) First lumbar puncture: Albumin, 3 gr.; cells, 45 (per cubic millimeter). Wassermann's reaction positive, with 51/100 c.c. of fluid.

First ventricular puncture: Albumin, 1 gr. 20; cells, 6. Wassermann's reaction strongly positive, with 501/100 c.c.

We inject 60 mg. of sulpharsenol diluted in 3 c.c. of sterilized water into the left cerebral ventricle. No immediate reaction.

Five hours after, light fever (40° centigrade). Dysarthria increasing much, but restlessness has completely disappeared. During the following week no agitation. Dementia and other signs unchanged.

(b) Nine days after the first injection: Second lumbar puncture: Albumin, 1 gr. 50; cells, 6. R. W. positive, with 51/100 c.c.

Second ventricular puncture: Albumin, 0 gr. 30; cells, 0. R. W. positive, with 801/100 c.c.

We inject 60 mgs. of sulpharsenol into the lateral ventricle. Five minutes after, the patient collapses with a pale face, trickling with perspiration; at night high fever, delirium, stiff neck. The day after, profound coma; the patient breathes stertorously. The day after, death.

(c) A third ventricular puncture shows: Albumin, 6 gr., xanthochromic fluid giving the principal reactions of blood.

Observation II. Man, aged thirty-eight. Paresis. The disease seems to have begun eighteen months ago, with a fit of mental confusion which lasted for three months. After a period of better health occurred the present episode of excitement; psychomotor expansiveness, incoherent and variable grandiose ideas, clear dementia, pupils unequal; Argyll sign on the right; hands and lips trembling.

(a) First lumbar puncture: Albumin, 2 gr. 15; cells, 92. R. W. positive, with 51/100 c.c. Colloidal benzoin reaction positive (2222).

First ventricular puncture: Albumin, 1 gr. 50; cells, 60. R. W. positive, with $71^{\circ}100$ c.c. Colloidal benzoin reaction positive (2222).

December 24th: We inject 5 mgs. of sulpharsenol diluted in 2 c.c. of sterilized water into the left cerebral ventricle. No accident; no improvement.

(b) January 4th: We inject 7 mgs. of sulpharsenol diluted in 2 c.c. of sterilized water into the cerebral ventricle.

Ventricular fluid: Albumin, 9 gr. 60; cells, 4. R. W. positive, with $51/100$ c.c. No accident; no improvement.

(c) January 6th: We inject 10 mgs. of sulpharsenol into the left ventricle. At night, temperature 39° centigrade; slight stiffness of the nose. During the following week no improvement.

(d) January 10th: Ventricular fluid: Albumin, 0 gr. 50; cells, 6. R. W. positive, with $51/100$ c.c. of fluid.

No improvement having occurred, the intraventricular treatment is stopped. The patient died seven months after this at the hospital.

Observation III. Man, aged fifty-two. Paresis. Beginning of disease about four months ago with agitation, cries, voluble and incoherent speech. Four paralytic fits of short duration, preceded each time by a loss of sense. Unequal pupils, bilateral Argyll sign. Muscles of the face, tongue, hands trembling much.

June 7th: First lumbar puncture: Albumin, 1 gr. 25; cells, 70. R. W. positive, with $201/100$ c.c. of fluid.

First ventricular puncture: Albumin, 4 gr.; cells, 100. R. W. positive, with $21/100$ c.c. of fluid.

(a) We inject 60 mgs. of sulpharsenol diluted in 3 c.c. of physiologic serum into the left cerebral ventricle. At night the patient vomits; temperature 40° centigrade.

Ventricular puncture: Albumin, 4 gr.; cells, 1,100 (polymorphonuclear), no blood.

June 10th: Agitation completely disappeared. From the 10th to the 14th of June agitation decreasing. All other signs unchanged.

(b) June 14th: Spinal fluid: Albumin, 1 gr. 50; cells, 50. R. W. positive, with $251/100$ c.c. of fluid.

Ventricular fluid: Albumin, 0 gr. 75; cells, 20. R. W. positive, with $501/100$ c.c. of fluid.

We inject 60 mgs. of arsphenamin into the left cerebral ventricle. Reaction greater than the first time: the patient vomits much; abundant respiration; fever 41° centigrade; intense headache. Yet on June 15th these signs are less intense; on that day we cannot make the ventricular puncture.

Spinal fluid: Very slightly yellowish with a few red corpuscles. Albumin, 4 gr.; cells, 200 (polymorphonuclear, and 60 lymphocyte).

From June 14th to 22d, no improvement; grandiose ideas as incoherent as formerly; trembling as intense; ocular signs unchanged.

(c) June 22d: Spinal fluid: Albumin, 2 gr.; cells, 40 (lymphocyte). R. W. * * *

Ventricular fluid: Albumin, 0 gr. 20; cells, 2. R. W. positive, with 80 1/100 c.c.

We inject 40 mgs. of sulpharsenol into the cerebral ventricle. Immediately after the injection the patient collapses and falls into the coma one hour later. Very abundant and continual perspiration. The patient breathes unequally and slowly and urinates unconsciously. At night fever 41° centigrade, and coma.

June 23d: Death.

Ventricular fluid is collected immediately after death: Albumin, 3 gr.; 900 polymorphonuclears and red corpuscles.

Observation IV. Man, aged forty-eight. Syphilitic chronic meningitis. Both pupils reacted very sluggishly to light but well to accommodation. Loss of the patellar reflexes and achilles tendon reflexes. No diminution of intellectual functions; on the contrary, the patient is bright. No delirious ideas; no hallucinations.

(a) October 4th: Ventricular fluid: Albumin, 0 gr. 20; cells, 0.1. Wassermann reaction negative, with 1 c.c.

Spinal fluid: Albumin, 1 gr. 50; cells, 60. R. W. positive, with 10 1/100 c.c. of fluid.

We inject 30 mgs. of sulpharsenol diluted in 5 c.c. of physiologic serum into the left cerebral ventricle. No immediate reaction; at night, no fever, normal pulse, no vomiting, no headache.

October 5th: Pulse, 60; fever, 38° centigrade; tongue and hands trembling intensely; speech difficult; profound indifference; no delirium; stiffness of the nape.

October 6th: Temperature, 37°; pulse, 60; no headache; persisting stiffness of the nape; retention of urine.

October 7th: Kernig's sign very intense; the nape is still very stiff. Ventricular fluid yellow without cells; albumin, 9 gr. 40; the blood tests are clearly positive in spite of the absence of red corpuscles.

October 8th: Death.

Anatomic verification shows masses of blood lying only in the sub-arachnoidal spaces; microscopical effusions of blood in the wall of the ventricles.

Observation V. Woman, aged fifty. Paresis. The disease has begun only five months ago with ideas of satisfaction and grandiosity. Here the patient looks a perfect dotard, disoriented for time, place, and persons. Deep reflexes normal; normal pupils.

(a) March 26th: Spinal fluid: Albumin, 0 gr. 70; cells, 40. R. W. positive, with 2.5 1/100 c.c. of fluid.

Ventricular fluid: Albumin, 0 gr. 40; cells, 30. R. W. positive, with 10 1/100 c.c. of fluid. In both fluids the colloidal benzoin reaction is strongly positive (2222).

We inject 1 mg. 5 of arsphenamin diluted in 3 c.c. of glucosed serum into the left lateral ventricle. No reaction, neither headache, nor vomiting, nor fever. During the first with no improvement.

(b) April 1st: Ventricular fluid: Albumin, 0 gr. 25; globulin content normal; cells, 2. R. W. positive, with 50 1/100 c.c. of fluid. The colloidal benzoin reaction is strongly positive (2222).

We inject 1 mg. 5 of sulpharsenol into the same ventricle. No reaction; no improvement.

(c) April 10th: Ventricular fluid: Albumin, 0 gr. 20; the fluid saturated to 37° centigrade with magnesium sulphate; R. W. positive, with 80 1/100 c.c. of fluid.

We inject 1 mg. 5 of sulpharsenol into the same ventricle. No reaction; no improvement.

(d) April 15th: Spinal fluid: Albumin, 0 gr. 60; cells, 25. R. W. positive, with 10 1/100 c.c. of fluid.

Ventricular fluid yellowish: Albumin, 0 gr. 50; cells, 15 (ependymal epithelial cells). R. W. negative, with 70 1/100 c.c. of fluid.

We inject 1 mg. 5 of sulpharsenol dissolved in 3 c.c. of water into the same ventricle. No reaction; no improvement during the following nine days.

(e) April 24th: Ventricular fluid: We can draw only 1 c.c. of fluid, turbid and without stains of blood, heavy with nuclear fragments, and cells sometimes gathered in spreading masses and which are obviously cells of ependymal or choroidal epithelium. The ventricular treatment is stopped.

Six months after, the same state of health.

Observation VI. Man, aged forty-eight. Amaurotic tabes. The optic neuritis has begun four months ago. Normal intellect; no sign of general paralysis.

(a) January 31st: Lumbar fluid: Albumin, 1 gr.; cells, 40. R. W. positive, with 5 1/100 c.c. In bad fluids the colloidal benzoin reaction is strongly positive (1122).

We inject 2 mgs. 5 of sulpharsenol into the lateral ventricle. No reaction; after the injection the patient walks home.

(b) February 6th: Ventricular fluid: Albumin, 0 gr. 30; cells, 5. R. W. positive, with 70 1/100 c.c. of fluid.

We inject 5 mgs. of sulpharsenol into the same ventricle. Reaction somewhat marked. One hour after the injection weak legs, perspiration, quick breathing; then everything becomes normal a few hours later.

February 7th: Some headache; the nape slightly stiff.

(c) February 18th: Ventricular fluid: Albumin, 0 gr. 10; globulin

content is normal; cells, 2. R. W. negative, with 1 c.c. of fluid. The colloidal benzoin reaction is positive (2222).

We inject 1 mg. 5 of sulpharsenol into the same ventricle. No reaction; no improvement; treatment stopped.

Observation VII. Woman, aged thirty-nine, offering symptoms of typical general paralysis which seem to have begun four or five months ago; the pupils reacted very sluggishly to light but well to accommodation; deep reflexes are increased; Argyll-Robertson pupils; episodes of excitement and expansiveness; loss of memory.

(a) July 2d: Spinal fluid: Albumin, 1 gr.; cells, 300. R. W. positive, with 5 1/100 c.c. of fluid; the colloidal benzoin reaction is positive (2222).

Ventricular fluid: Albumin, 0 gr. 10; cells, 0.1. R. W. is negative, with 70 1/100 c.c. of fluid.

We inject 5 mgs. Billon's salvarsan diluted in 4 c.c. of water into the left cerebral ventricle.

One hour after the injection: Intense perspiring; headache; vomiting; very wan face; fever, 38.5°; pulse, 170. Frequent vomiting in the afternoon. At night, fever, 39° centigrade; the nape is very stiff.

Ventricular fluid: Albumin, 2 gr. 50; cells, 1,000 (polymorphonuclear), and red corpuscles. R. W. positive, with 70 1/100 c.c. of fluid.

July 3d: Nape is still stiff; very marked dysarthria; the patient is very indifferent; fever, 39°; vomiting.

Ventricular fluid: Albumin, 3 gr. 50; cells, 800; the fluid contains some blood corpuscles.

Ventricular fluid, somewhat yellow: Albumin, 1 gr.; cells, 20. The Wassermann's reaction is negative.

(b) July 10th: We inject 1 mg. 5 Billon's salvarsan into the same ventricle. No reaction.

(c) July 17th: Ventricular fluid limpid and colorless. Albumin, 0 gr. 25; cells, 7. R. W. is negative.

Spinal fluid: Albumin, 1 gr.; cells, 100. R. W. positive, with 30 1/100 c.c. of fluid.

We inject 1 mg. 5 of the same salvarsan into the ventricle. No reaction; excitement completely disappeared since one week; grandiose ideas are less abundant; little activity; in short, the patient is slightly better.

(d) July 24th: We inject 1 mg. 5 of the same salvarsan into the ventricle. No reaction. The delirious ideas are less marked; other signs unchanged.

(e) July 31st: We inject 1 mg. 5 of sulpharsenol into the left cerebral ventricle. No reaction.

(f) August 7th: We can draw only 3 c.c. of turbid ventricular fluid, heavy with choroidal and ependymal cells. Treatment stopped. The improvement of delirious ideas has lasted for three months.

Observation VIII. Man, aged forty. Paresis. Profound indifference; grave defects of memory; completely disoriented for time and place; Argyll-Robertson pupils; speech is unintelligible.

(a) May 15th: Spinal fluid: Albumin, 2 gr.; cells, 15. R. W. positive, with 40 1/100 c.c. of fluid; colloidal benzoin reaction is positive (1½22).

Ventricular fluid: Albumin, 2 gr.; cells, 20. R. W. positive, with 50 1/100 c.c. of fluid; colloidal benzoin reaction positive (001¾1½).

We inject into the lateral ventricle 4 mgs. of salvarsan. No reaction.

(b) May 18th: Spinal fluid: Albumin, 3 gr.; cells, 38. R. W. negative, with 40 1/100 c.c. of fluid, and positive, with 60 1/100 c.c. of fluid; benzoin reaction positive (0012).

Ventricular fluid: Albumin, 0 gr. 60; cells, 74. R. W. negative, with 1 c.c. of fluid; colloidal benzoin reaction positive (0¼¾1).

We inject into the lateral ventricle 2 mgs. of salvarsan. No reaction.

(c) May 24th: We inject into the lateral ventricle 2 mgs. of salvarsan. No reaction.

(d) May 30th: Ventricular fluid: Albumin, 0 gr. 30; cells, 4. R. W. negative, with 1 c.c. of fluid; benzoin reaction positive (001¼).

We inject 2 mgs. of salvarsan into the lateral ventricle. No reaction; no improvement.

(e) July 7th: We can draw only 4 c.c. of ventricular fluid without red corpuscles, and heavy with choroidal and ependymal cells. Treatment stopped. No improvement.

GENERAL VIEW OF OUR OBSERVATIONS

(1) The doses of salvarsan tolerated by the ventricular spaces, or rather by the neighboring nervous tissue, are somewhat variable; (a) higher doses—in three observations, I, III, IV, it seems obvious that the doses used were too high (60, 40, 30 mg.) and have certainly brought on the death of the patient; immediately after their introduction into the ventricles we have marked collapsing phenomena ending by coma and death in a period between ten and forty-eight hours. In this case salvarsan brought on hemorrhagic encephalitis in the regions of the brain limiting the ventricles. It is easy to ascertain the fact: in Observation IV the anatomic verification showed masses of blood lying in the wall of the ventricle; in the other two cases the ventricular puncture showed a xanthochromic fluid, rich in albumin, and containing red corpuscles.

We must, therefore, consider as too high the doses of salvarsan, bringing on a ventricular hemorrhage, even if the latter is very small.

But our observations show a very important fact which had not been pointed out till now. In the patients I and II, who died, the

first injection of a very high dose of salvarsan was very well tolerated, whereas the later doses, which were not more important, brought on very serious accidents. We cannot consider an accumulation of the drug, which, as we have shown, is very quickly resorbed by the veins. Anaphylactic phenomena could not explain those strange facts. On the other hand, we have made an observation able to explain those accidents in a satisfying manner: in proportion as the ventricular fluid becomes normal, losing its too considerable albumin and cells, under the influence of salvarsan, the nervous tissue limiting the ventricles becomes more sensible to arsphenamin. Observation III is typical in this respect: the first dose of 60 mg. is well tolerated, it considerably modifies the ventricular fluid; the second injection of 60 mmg. is badly tolerated, but the ventricular fluid becomes almost normal; the third injection of 60 mmg. makes the patient to die at once. It is the same with Observation I: the second injection, given when the ventricular fluid had become almost normal, brings on fatal accidents.

Let us compare the facts with Cases III and VII: Formerly with those patients the ventricular fluid was normal, and the first doses of salvarsan, which, however, were far less high than in the preceding cases, 30 and even 5 mmg. were tolerated with much difficulty.

We draw from those facts the following important conclusions: When the ventricular fluid is modified, rich in albumin and cells, we can with impunity inject a comparatively high dose of salvarsan (see below the rate of the dose).

In proportion as the albumin content and the number of cells decrease, we must diminish the doses of the drug and come quickly to the dose of 1 mmg. of salvarsan, which is always tolerated.

(b) Doses to be recommended. It is possible to inject comparatively considerable doses of salvarsan into the ventricles containing a fluid rich in albumin and cells, but never in those cases is the dose of 6 mg. to be gone beyond. When the albumin content does not exceed 0 gr. 50, 1000 c.c. and of course when the ventricular fluid is normal, we must not go beyond the dose of 2 mg., at a time. The dose of 1 mmg. 5 seems to be well tolerated in all cases.

To sum up, we consider as obvious that salvarsan is tolerated in a better manner, in proportion as the ventricles are more touched by the syphilitic injection. It is absolutely indispensable, if we have begun, in those cases, with high doses, to diminish them, in proportion as the ventricular fluid becomes normal again.

(2) Action of intraventricular salvarsan. (a) On the ventricular fluid. As we know how difficult it is to make the excess of albumin

and cells together with the R. W. disappear in the spinal fluid of patients suffering from general paralysis, we have been astonished by the action of salvarsan injected into the ventricles. In almost all cases, immediately after 1, 2 or 3 injections, the ventricular fluid was extremely modified, even with moderate doses. The albumin content becomes normal and so does the excess of cells and R. W. itself, in more than 50 out of one hundred cases becomes negative, or at least becomes less marked, in a considerable manner. On the contrary Guillain's colloidal benzoin reaction lasts on with the same intenseness. Let us point out, in passing, this important fact:

R. W. and colloidal benzoin reaction may be greatly positive in ventricular fluids, whose albumin and globulin content is normal (see our research work on ventricular physiopathology in cerebral syphilis published in the "*Annales de Médecine*," 1924, Paris).

(b) Upon the spinal fluid. The spinal fluid is modified in a similar manner but far less obviously. The number of cells and the albumin content diminish, and never has R. W. been made negative.

(c) On ependyma, epithelium and choroidal plexuses. In 2 cases (Obs. V and VIII) repeated injections of intraventricular salvarsan (4 with every patient) have acted very clearly on the epithelium secreting the cerebrospinal fluid: the cells have dropped off in fragments floating in the ventricular fluid. They were much modified. Moreover we will point out an essential fact, which has not been spoken of, hitherto: with these two patients after the fourth injection of salvarsan the quantity of ventricular fluid had greatly diminished. This very particular action of salvarsan on the epithelium secreting the cerebrospinal fluid, could certainly be used in the treatment so helpless hitherto of internal hydrocephalus. Research work now going on shows how these hopes are firm in their foundations.

(d) On the symptoms offered by the patients. In spite of a treatment, which most of the time was intense enough and rather prolonged, we have never observed any recovery, in the right sense of the word, even for the patients treated since the apparent beginning of general paralysis. Deficiency of speech, trembling of the tongue and hands, Argyll-Robertson sign remain unchanged. Never does the dementia undergo a favorable modification. The restlessness and the unconnected ideas diminished at times, but we know how frequently this happens in untreated general paralysis. We cannot say that the intraventricular treatment has a felicitous influence on the evolution of the disease which keeps on unflinchingly.

To sum up we can say with certitude that the salvarsan injection into the cerebral ventricle brings on very happy modifications of the

humoral syndrome. It is, up to the present time, the only known treatment, which gives back its normal composition to the cerebro-spinal fluid.

Unhappily we are forced to consider that the action of the aforesaid treatment on the clinical evolution of the disease seems very doubtful.

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RUMINATION IN RELATION TO PERSONALITY DEVELOPMENT

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In considering an individual as a patient we always like to know something about their family history, even though we have comparatively little scientific data concerning heredity.

When an infant appears in the world we can easily see whether it has two arms and two legs and is physically quite perfect, but we are unable to view what mental equipment the baby has. Every week old baby may react to the same situation in quite a different manner. To better understand the infant we must not only take into consideration the reaction, but also must consider the individual in whom the action has taken place. Why did one baby react in a different manner than the other baby under like stimulation? This question is always presenting itself and whether we are going to find out the reason by simply studying the parents and not studying the child himself, or one wonders if it is not necessary to study both his phylogenesis and ontogenesis.

Let us consider for a moment some data relative to heredity. Smith¹ says: "If heterologous hereditary characters are united, it will in the descending line entail the occurrence of a considerable number of psychoses, about one-half of which are purely segregated as the pure psychoses of the separate dispositions, whereas the other half present combinations of the various phenotypes in the theoretically imaginable ways." Bleuler² states in his remarks on "Foetal Diseases," that "The embryo too, may be harmed by disease of the mother, lack of room in the pelvis, by traumatic occurrences, as well as by intrauterine diseases, so that it comes into the world as an idiot or psychopath. To what extent psychical influences on the mother harm the fetus, has not been scientifically determined. Undoubtedly sorrow and other chronic depressions may disturb nutrition; and a psychic shock—perhaps through a spasm of the uterine vessels—may be noticed by the fetus to such an extent that it may find a vent in wild movement with change of position whereby injuries of various kinds are conceivable." Frankhauser,³ Davenport and

Weeks,⁴ Barrett, Bleuler,⁵ Larsen,⁶ and Boven,⁷ have, along with many others, done considerable work on research of this type.

Stewart, Sir James Purves,⁸ in his last edition takes up several conditions which he thinks are due to heredity. "Let us take, for example, Friedreich's ataxia, a family degenerative disease affecting mainly the afferent tracts in the postero-lateral columns of the cord leading upwards to the cerebellum, which is the center for automatic coördination (the cerebellum itself being intact)—patient is commonly an adolescent.

"Marie's heredity cerebellar ataxia, another family disease, due to primary parenchymatous degeneration, not of the spinal cord, but of the cerebellum itself.

"Progressive hypertrophic neuritis is another family disease which begins in childhood or adolescence.

"Pathologically we find proliferation of the neurilemma cells, producing a sclerotic thickening of the peripheral nerves from two to sixty years, though most cases occur in childhood or youth.

"Amyotonia congenita (sometimes, though less aptly, called myatonia congenita) is a condition of extreme flaccidity of the muscles, which are soft and lax on palpation. When thrown into voluntary contraction they do not harden like ordinary muscles, and it is impossible by palpation to distinguish them from the subcutaneous tissues. The joints are flail-like, and can be placed in all sorts of fantastic postures. The condition, which is congenital, and may affect several children of the same family, is really a variety of myopathy. The phenomena are usually detected within the first twelve months after birth.

"Psychasthenia is a more serious affair than neurasthenia. Unlike neurasthenia; which is a disease of adult life resulting from some extraneous cause, psychasthenia is essentially an endogenous disease, the culmination of an engrained neuropathic heredity, and its earliest indications appear in adolescence or even in childhood. In short, the psychasthenic, like the poet, is 'born, not made.'"

After obtaining our background we must next consider our infant as an individual of the whole from all levels of development, viz., physically, chemically, from the neural development, psychologically and socially. We cannot subtract any part of an individual and pass judgment on him because we are not getting the reaction of the individual as a whole. Cross sections may give us insight, but surely we must have a longitudinal section before our final conclusions can be reached, that is of course if we wish to reach the highest type of efficiency in our work.

While the child is traveling through the birth canal he is subjected to many dangers. Little⁹ in 1861 presented clinical evidence to support the theory that some of the mental and physical defects of children were due to injuries of the central nervous system during delivery. Crother's¹⁰ states "The part which has not received general recognition is that babies can be, and frequently are, seriously and even fatally injured even if the forces used in delivery are well within what are regarded as normal limits."

A great many times the damage may be so slight that we are unable to recognize it. In cases of asphyxia neonatorum, when the circulation is cut off and the baby is left inside the uterus for an indefinite time, asphyxia may be assumed, but the question is, How long can the fetus remain and not have permanent damage? Edgar,¹¹ defines a condition known as "Blue asphyxia" and Williams,¹² describes "White asphyxia." In both of these types of cases there is one point of similarity, that is in both cases the babies are apneic. The clearest descriptions of the results of loss of function in the medulla and cerebral cortex are given by Stewart, Guthrie, Burns and Pike.¹³ Gomez and Pike¹⁴ indicate that the cells of the cerebral cortex resist total anoxemia for about ten minutes and those of the medulla for twenty minutes. While Cannon and Burket¹⁵ demonstrated that the nerve cells of the mesenteric plexus survived and were functionally undamaged after total anemia lasting for hours. All these experiments were made on adult animals. From the work done by Crile and Dolley,¹⁶ we are led to believe that the tissues of younger animals are even more resistant.

From the above data one can easily conceive of a condition in which the circulation is cut off only momentarily, and again individuality is early proven; some infants have a higher threshold of resistance toward CO₂ than others; these children do not come into the world with the same mental and nervous equipment as one who has not been momentarily asphyxiated.

Sharpe,¹⁷ in 1923 and later in 1926 with Maclaire,¹⁸ found "In summarizing the foregoing series of 500 consecutive new-born babies on whom a lumbar puncture was performed within from twelve to twenty-four hours after birth, it will be noted that in forty-five babies there was disclosed bloody and blood-tinged cerebrospinal fluid; that is, in 9 per cent of the entire series. One baby dying before a lumbar puncture was performed, the puncture being made fifteen minutes after death, revealed on necropsy an extensive intracranial hemorrhage with bloody spinal fluid. This case, however, has not been included as having bloody cerebrospinal fluid. It must

also be remembered that as many as fifty babies, that is, 10 per cent of the entire series, were not tapped. In thirty-six a dry tap was recorded, and in fourteen the test was not performed, as seven babies were in severe shock and seven premature babies were in poor condition. Its acute signs are often meager and may be apparently entirely absent, the more common signs being from drowsiness to stupor, from difficulty to refusal to nurse and from muscular twitches to general convulsive twitches. First born, full term males having difficult prolonged labors are more liable to this complication, forceps being used as a last resort rather than their early application, medium forceps and breech extraction.

Hemorrhagic disease of the new-born is not a common etiologic factor, at least in this series of cases, in which puncture was done and tests were made within from twenty-four to forty-eight hours after birth. Lumbar puncture as an early diagnostic method when hemorrhage is still in fluid form, and as a therapeutic means of spinal and cranial drainage, is a simple and safe procedure in the absence of severe shock. The early recognition and appropriate treatment of the acute condition of intracranial hemorrhage in the new-born may thus lessen the large chronic group of physically and mentally retarded children."

De Lee in discussing Sharpe's paper brought out the fact that babies were frequently injured during so-called normal spontaneous deliveries. Schwartz¹⁹ found macroscopically and microscopically that in 65 per cent of 130 children who came to necropsy before the age of six months, there were hemorrhages or the results of hemorrhages in the brain, and he stated that in his belief a large majority of the diseases of children in the first six months after birth are the immediate or remote effects of these hemorrhages. He further stated that "the pathology of the first month of life is completely dominated by the birth injuries of the brain." Fischer,²⁰ of Basel, has written that his post mortem observations at the institute have convinced him that "the 10 per cent of deaths during the first month are chiefly due to cerebral birth injuries." Also, Huenekens²¹ said that "the recognition of a cerebral hemorrhage of the new-born is a most neglected phase in their care and yet it is a most important one." Schafer,²² Saenger,²³ Capon,²⁴ and Barnett,²⁵ have also made reports on post mortem findings.

One is immediately impressed with these findings, and of course wonder how many babies have very slight minute injuries that are never noticed. We are, of course, unable to state just what damage has been done, but we have a right to theorize that because of such

an injury the total reaction of the individual towards psychological and social adaptation may be changed.

After birth our personality study begins, there are a number of authors to follow, as Hoch, Amsden, Adolf Meyer, Healy and Watson.

There is no doubt that the more complete our knowledge is of the present and past of any person, the more accurate our analysis of his personality will be.

We must make a complete study of this individual functioning as a whole unit. It must be remembered that the human being has not one function to perform, but thousands, and the adjustments of the parts must vary in each and every new duty if the work of the whole organism is to integrate at a higher level. The glands of internal secretion must be watched. If you can diagnose our case of cretinism before the end of the baby's six months, and treat the patient, we apparently have a perfectly normal child, but the older the child the more permanent the results of hypothyroid shows in the individual's total reaction.

We have a very difficult condition occurring in infants about which very little is known, that is Rumination. This condition was first described in the sixteenth century by Fabrice d'Acqua Pendente. Since that time very little has been learned about it. Brockbank²⁶ has mentioned "it may be a definite familial trait." The neurotic element is as strong here as it is in earlier life and there is nearly always in these cases, as in the former, a history of neurosis in the parents, accompanied by swallowing of air, biting of finger nails and other nervous symptoms. These children are not disturbed much as to their general health and apparently are not affected by the disease. Treatment is directed toward the control of mastication, hydrotherapy, fresh air, and as the child becomes older, an appeal to its pride." Freund²⁷ said, "Duodenal ulcers are frequently found"; after this is eliminated we find "these children are always neurotic and respond to external stimuli in an exaggerated manner. They awake at the slightest sound, are very irritable, and cry very long and hard from the slightest discomfort. There is, though, in almost all cases a certain degree of emaciation and the neurotic elements are always present. The act occurs any time; it is often preceded by sucking of the fingers, immediately following which the food is brought up into the pharynx. It is held there, the tongue being moved backwards and forwards, accompanied by a sound very similar to that made when gargling." Wernstedt²⁸ states: "That

each case has a distinctive mechanism of its own." Grulee²⁹ has suggested that it rests on an overaction of the sphincter muscles in the upper portions of the alimentary canal. Yeppo³⁰ has found that, "During rumination, air may be swallowed in large amounts." Byfield³¹ states, "Unless it be the rheumatic syndrome there is no other clinical entity so closely associated with tonsillar infection as is periodic or cyclic vomiting." Here he is dealing with older children and not with rumination.

"Thus statistical series have shown that in well defined cases of the latter disease, the removal of the tonsils has acted almost as a specific. It is recognized, however, that the focal infection is only the exciting cause of a trouble whose real cause lies in a fundamental and constitutional peculiarity of metabolism. It has never been demonstrated in this disease that infection has any specific influence upon metabolism processes directly, although the chemical investigation of infection in general suggest this."

Grulee³² said in his chapter on Rumination or Merycism—"One should make a sharp distinction between rumination in infants and rumination in older children. In one essential feature at least it is distinctly different in the two. In infancy when the child is on liquid nourishment, the material ruminated is practically always fluid in character, while later when the child is on solid food, a ball of food or cud is formed which is brought up and frequently masticated a second time. Not so rare, more frequent in girls than boys. No difference in climate or season. It begins often in the *very first week of life* * frequently in first six months and in nearly all cases there is a history of repeated vomiting previous to the fully developed rumination. Gastrointestinal disturbance aside from this, apparently play very little part and it is not at all unlikely that mild forms of pylorospasm may precede the condition. *In nearly all cases a definite history of neurotic tendency in the parents can be obtained.*

Pathology—There is very little in the way of pathology in connection with these cases. Dilation of the esophagus has been noted. Most writers are satisfied with the statement that the condition is a gastric neurosis and that the continuance of the condition is in the nature of a habit. This, however, does not give us the mechanism of the rumination act nor the underlying cause.

Course.—"Exist for several months, may be a forerunner of rumination in later life. *Prognosis*.—In severe cases the mortality

* Italics mine.

will probably range between 25 and 50 per cent. In mild cases it does not threaten life. *Treatment*.—On the whole has been unsatisfactory. *Drugs*.—First lowering of the stomach reflex by the action of the drug, and second an effort to control the neurotic condition of the patient by a sedative. Cocaine in dilute solution, and bismuth and other drugs of like nature have been used. It should be stated, however, that there have been no regularly favorable results from this treatment, although it has been tried in nearly all cases, and the use of bromides and like sedatives have not been accompanied by the results which would be expected if the condition were of central origin."

Schippers³³ has noticed the occurrence of rumination even during sleep.

Various types of treatment have been tried over a long period. For instance, Stanch³⁴ suggests "Plugging of the nostrils with wax."

Taylor³⁵ has tried "tying up of the jaw," also Bachelor and Bachelor,³⁶ Kerley and Lorenze,³⁷ and Reehn³⁸ have tried the same method as Taylor.³⁵ The latter reports fifteen of seventeen cases cured with this treatment. Eaton³⁹ saw gradual improvement after tying the hands so that the baby would not suck the fingers; he also made an effort to attract the child's attention immediately after feeding, and used thick diet frequently changing the diet, keeping out external stimuli by covering the sides of the crib. Strauch⁴⁰ reported a case recovering following pertussis. Siegert⁴¹ recommends an inflatable bag to prevent rumination. Cailland,⁴² H. Bischoff,⁴³ Kerley,⁴⁴ Calbory,⁴⁵ S. DeVilla,⁴⁶ and Greer⁴⁷ have also contributed to the subject of rumination without offering any specific cause for the disease. Comby⁴⁸ states that it is not frequently seen in older children and reports five cases. "Very many of the cases give a definite history of earlier rumination and nearly all of some gastrointestinal disturbances in early life. You frequently find it in idiots and mental diseases, but it itself is not any indication of mental disease."

Permit me to give some case reports.

Case I. A. G. Children's Hospital, Boston, Mass.

Informant: Mother.

Complaint: Vomiting and failure to gain since one week of age; baby is now seven weeks old.

* Italics mine.

Family history: Mother twenty-eight, father twenty-nine, second pregnancy, no miscarriages or still births. One child two years old apparently all right. No history of tuberculosis, syphilis or epilepsy in the family. No history of rumination in either family.

Social condition: Live in a 5-room apartment near Bennett Street, a very crowded district in Boston. Father is a day laborer. Mother works out when able.

Past history: Full term birth, labor only a few hours and easy, no instruments used. Mother did general housework up until few hours before birth. Was a healthy baby at birth, weight $7\frac{1}{2}$ lbs., breast fed for two weeks then different formulas were used; child began to ruminate at end of first week and diet was changed at end of second week. Failed to gain after first week. No regular time to ruminate, sometimes following feeding, at other times just before feeding. Stools are well formed, yellowish in color, not fetid in odor. Sleeps 14 to 16 hours a day. Does not cry a great deal.

Development: Gained the first week and has been losing weight since.

Previous illness: None.

Present illness: A female infant, age seven weeks, was admitted June 14 for ruminating and failure to gain weight since one week old. She was not irritable, appeared bright, took notice of little happenings about her crib and did not seem as ill as her physical condition would indicate. Her extremities were hypertonic.

Physical examination: Age seven weeks. Temperature normal. Pulse and respiration within normal limits. Weight 7 pounds.

General description: A poorly developed, white female infant of Irish parentage, undernourished, but bright. The skin was dry and pale, no rash or eruptions. A few enlarged glands in the neck were found. The head was fairly well shaped, measured 18 inches in circumference, no bulging of fontanelles. No tenderness over sinuses or mastoids. Eyes, ears, nose, mouth, gums, tongue, mucous membranes, palate, were normal. The chest was normal in shape but very emaciated; suspicion of rickets. No rales, breath sounds normal. Apex-pulse at 5th interspace one-half inch within nipple line; no murmurs. Abdomen, flat, no rigidity or tenderness. There was visible peristalses and no spasms. No masses. Genitalia; no discharge. Anus, no prolapse or fissures. Spine, normal. Extremities, upper, normal; lower hypertonic. Nervous system, bright mentally. Reflexes, difficult to elicit, but apparently normal. Local: Nothing was found that would give any indications of any physical disability. Impression (laboratory): Bismuth series showed no gastric retention. We have an infant seven weeks of age who has been regurgitating her food for the past six weeks; has failed to gain in weight; who is emaciated. Outside of this we are unable to find any pathological condition. She is bright and does not impress one as being as ill as her general physical condition would indicate. She is a case of rumination without any discernible pathology, probably a neurotic basis.

Treatment: Codliver oil MX; atropine sulphate gr. 1/1000, 1/500. Change diet, make as thick as possible. Regular feeding.

Note: June 1, one week later, infant continues to regurgitate food. Diet has been changed frequently. July 12, diet changed, child continues to regurgitate; is bright and liked by the nurses in the ward. Have nicknamed her Duke. Have tied her hands and also used chin strap. July 26, chin strap appeared to help some; child is gaining slightly and not regurgitating so frequently. Aug. 14, child is getting along nicely; laboratory reports are negative; is gaining in weight and not ruminating so frequently. Aug. 24, discharged to home; diagnosis rumination; instructions to gain child's attention after feeding, to use chin strap, tie hands if necessary to keep them out of her mouth and feed regularly. Diet had been changed 19 times in 9 weeks. Aug. 26, child returned with loss of weight; had been regurgitating regularly since return to home surroundings. Lavage and atropine gr. 1/1000 were given. Physical repeated, everything negative. Child remained until October 17 and during this seven weeks the diet was changed 11 times, making 30 changes in 16 weeks. Alpine lamp was used. Atropine sulphate gr. 1/1000 and lavage. Finally the child stopped regurgitating and gained in weight. Everyone was of the opinion that hospital routine did more toward cure than anything else. A very careful home routine was outlined for the mother.

Case II. Children's Hospital, Boston, Mass.

Informant: Mother.

Complaint: Mother stated that child had been vomiting since being weaned, which was at the age of nine months and the child was now eleven months old. They had first tried a skimmed milk formula but had changed with no results.

Family history: Mother thirty-one years old and well; father thirty-four years old, living and well. Two other children living and well, both older; no history of miscarriages or still births. No history of Tb. or mental disease in family.

Social condition: Live in a small crowded apartment; father is a day laborer. Mother does not go out to work.

Past history: Full term, easy labor, no instruments used; labor 1 hour. Weight $8\frac{3}{4}$ lbs. at birth; breast fed for nine months; gained weight; was a healthy baby, but fussed a great deal. Mother could not supply enough milk and child was weaned. Never vomited until nine months of age, then commenced and has continued up until the present time. Stools were well formed. Cried when left alone; wanted attention all of the time.

Development: Two lower central incisors were out. Has been a bright child; noticed things about it. Held head up fifth month; sat up ninth month.

Previous illnesses: None; child had been in good health up until two months ago. No gastrointestinal disturbances.

Present illness: An eleven-months-old boy who was quite well until suddenly weaned on a skimmed milk formula at nine months. Child commenced to regurgitate its food and has gradually lost weight.

Physical examination: Infant admitted Jan. 2; no rise in temperature; pulse and respiration normal.

General appearance: An emaciated, eleven-months old white boy; showed marked nervousness and apprehension and a moderate acidosis. Skin was slightly dry and warm, no pigmentation, rash or eruption. Glands, some in the neck were enlarged. Head, the posterior frontal was closed; the anterior was not bulging. Face is pinched looking. No tenderness over sinuses or mastoids. Head well shaped. Eyes not prominent, pupils were regular; no nystagmus; conjunctiva and sclera were clear. Ears, no discharge. Nose, breathing through it freely. Mouth, two lower teeth; gums very red looking; mucous membrane slightly red, no ulcers or eruptions; palate not high arched; tonsils not enlarged; pharynx apparently negative; larynx, voice sounds strong; neck, no rigidity, enlarged lymph glands; chest very emaciated, clavicles were prominent; respiration was free and quiet; lungs, no friction or bronchial fremitus, apparently negative; heart, P.M.I in 5th interspace one-half inch within nipple line, no murmurs; abdomen, stomach occupied a normal position and appeared regular in outline; there was no evidence of pyloric obstruction and no evidence of obstruction in the small intestines; the barium was found in the rectum at the end of 6 hours; no evidence of obstruction; genitalia, negative; anus, negative; spine, negative; upper extremities, no tenderness, tremors or atrophy; lower extremities negative; nervous system was alert, apprehensive and unstable; reflexes, deep and superficial, were apparently all normal, no Kernig, neck rigidity, Babinski or clonus; local, negative; laboratory, all findings were negative; impression, examination revealed no pathology except that the child seemed very alert and apprehensive, was very emaciated and a moderate acidosis. Diagnosis: (1) Rumination, (2) neuropathic infant, (3) neurotic vomiting, (4) starvation.

Treatment: Intraperitoneal injection to which the acidosis responded, but child continued to vomit. Diet changed 15 different times in every fashion and method in 27 days. Luminal gr. 1/10 in alternate feedings; glucose by mouth; lavaged; clysis, 180 c.c.; saline, 150 c.c. subpectoral; glucose, 150 c.c. intravenously; S. S. enema. Infant continued to vomit and lose weight. After consultation a jejunostomy was performed as a last resort after an attempt to pass a duodenal tube had failed. Jejunal feedings instituted but following operation child vomited and continued to do so. Died apparently, from starvation.

Post mortem: Gastrointestinal tract: Esophagus, stomach, negative. The duodenum is distended with bile, also the first part of the jejunum,

down to the jejunostomy. The jejunostomy opening is made in a loop of intestine 15 cm. distal to the pylorus. No peritonitis evident. The small intestine is filled with poorly digested food. The small and large intestine is everywhere negative, except as altered by the recent operative procedure. No evidence of obstruction in the size of the intestinal lumen, or of malformation or inflammation. Pancreas, negative; liver, negative; gall bladder and ducts, negative; kidneys, negative; adrenals, both weight 5 grams, negative; bladder and genitalia, negative; aorta, negative; organs of neck, tonsils, pharynx, larynx, trachea, esophagus and thyroid, negative; brain, skull and sinuses, negative in general.

Case III

Informant: Mother.

Complaint: Baby has been bringing up all of his food ever since mother and child came home from the maternity hospital. Baby is now six weeks old, was about two weeks old when they left the hospital.

Family history: Mother thirty-one years old, in good health; father thirty-two years old, working every day and in good health. This was the second child. No history of miscarriage or still births. Parents deny history of T.B., syphilis, or psychoses in the family.

Social condition: Live in a small apartment in the congested area of the city. Father is a day laborer.

Past history: Birth: long, difficult labor, forceps were used and the baby was cyanotic. Was full term. Baby seemed to be in good condition in the hospital but at the end of ten days they returned home; child began to bring up its food and he was placed on a formula; he continued to lose weight and not retain his food; he was brought to the Children's Hospital when he was six weeks old. Had two stools a day, so mother stated.

Sleep: Did not rest very well, cried a great deal, had no direct relation to feeding.

Present illness: Began at the age of ten days to bring up its food after feeding. Failing to gain in weight.

Physical examination: Age six weeks. Temperature 99°, pulse 100, respiration 24, weight 8 lbs.

General appearance: A small, undernourished, alert boy; skin was soft, moist and reddish in color; no enlarged glands; head was small, fontanelle were level; eyes, negative; ears, no discharge; nose, no obstruction; mouth, lips red, no herpes; gums, no ulcers; tongue, normal in size, not coated; neck, no rigidity; chest, small but normal shape; lungs, no friction or bronchial fremitus; heart, P.M.I., normally located, no murmurs; abdomen, no tenderness, somewhat retracted, and muscles tight; liver and spleen not palpable; no masses or hernia; no dullness and no visible peristalsis; genitalia, normal; anus, no prolapse or fissures; spine, normal; upper and lower extremities, no deformities, spasms, paralysis or atrophies; nervous system, child was alert, reflexes normal.

Impression: A child which from ten days of age has been a feeding problem. It may be simply the inability to absorb formulae, but the possibility of pyloric stenoses must be considered.

Note: Aug. 17, when the baby was quiet and untouched, definite peristaltic waves were seen beginning in the upper part of the abdomen and passing slowly down toward the umbilicus. The outline of the stomach could also be easily seen. No mass was palpable, but a thick, fairly well formed soft stool shows evidence of food passing through.

Treatment: Atropine gr. 1/1000 in whole milk. Diet was changed seven times in three weeks. At this time a chin strap was applied and the child did not vomit that day. The atropine was discontinued and the baby brought up its food again. Was put back on atropine gr. 1/1000 in 3 oz. of feeding six times a day. Continued to bring up food.

Note: Aug. 17, nurse calls him a swell, because "he is very bright and indifferent." He appears to know what he wants; he seems to size one up and to look them over and will take his feeding from one certain nurse much better than from any other. Regardless of his rumination, he does not appear to be ill.

Note: Aug. 19, the baby was observed during feeding and shortly after what appeared to be contraction of the deglutatory muscles, a quantity of gastric contents suddenly appeared in the mouth. Here the material rested against the posterior pharyngeal wall and was moved back and forth by the action of the tongue. After approximately 30 seconds the fluid was again swallowed. A repetition was observed at least eight times, each being as described above. No food was lost unless the child would turn its head.

Note: Aug. 22, in spite of the loss of weight the baby is bright and active and does not look actually ill. Baby was placed on thick feeding and the rumination appeared to be under control but the next day rumination continued.

Note: Aug. 25, child's hands were tied and chin strap continued, and also atropine added. Baby did not ruminate for six days, then began again, but not as frequently as formerly.

Note: Sept. 12. There has been a general rapid improvement in the clinical condition; although occasionally rumination occurs, the baby has so far improved that it was thought advisable that he could be safely discharged.

Remarks: During his stay in the hospital he had periods of rumination with periods of quiescence and improvement. Among the attempts to check the rumination were medication with atropine, thick formulae feedings, change in formula, a restraint chin strap, hands restrained and change in position, all of which seemed to help some.

CONCLUSION

From the above one can easily understand why it is impossible to obtain accurate insight into any one individual by cross section

study only. We must consider him as an individual of the whole and study him longitudinally.

The babies who ruminated commenced at a few weeks of age to demand a considerable amount of attention. They possessed a special personality make-up even at this early age sufficient to acquire "nicknames" from the nurses who had to deal with them.

It seems to me that in every case one should carefully search for a history of rumination.

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SOCIETY PROCEEDINGS

THE WASHINGTON SOCIETY FOR NERVOUS AND MENTAL DISEASES

JANUARY 20, 1927, ARTHUR P. NOYES, THE PRESIDENT, PRESIDING

THE INTRAVENOUS INJECTION OF CALCIUM SALTS IN THE TREATMENT OF EPILEPSY

ELMER KLEIN, M.D.

This report is a résumé of his experimental work in the use of intravenous injections of calcium chloride and gluco-calcium in the treatment of some epileptics. The results are in all respects negative. He gives a review of the literature. (This will appear in full in the JOURNAL.)

DISCUSSION

Dr. Freeman: These negative results are quite interesting in the light of positive results reported by other investigators. The possibility of associated therapeutic measures in their cases must be considered for these experiments seem to have been controlled particularly well. I believe that the intravenous use of calcium salts is no longer considered necessary since a considerable rise in blood calcium is found after oral administration. The relation of the seizures to calcium deficiency has been suspected, but is far from proven. Our own studies indicate that the blood just before the convulsion shows a considerable reduction in glucose. Whether this has any relation to the pancreas is unproven, but in a series of epileptics followed to necropsy the pancreas has been found consistently larger and the islands more numerous than in cases of other psychoses.

Dr. Main: It seems to me that in going over the literature some of the cases selected for calcium therapy had had a low calcium intake. Perhaps this may have contributed to their more hopeful results.

Dr. Lind inquired if there was any subjective improvement in these patients? Epileptics, particularly, are apt to feel better in the initial stage of any kind of treatment. Were they told that they would be relieved? I should also like to ask if there were non-psychotic patients in the groups studied by other investigators.

Dr. Forcione: Many of the Italian investigators report good

results. Apparently there was much improvement in the general condition of their patients.

Dr. Reede asked if the doctor found any pregnant epileptics or pregnancies with epilepsy or other convulsive phenomena in his review of the literature.

Dr. Noyes: I am glad that Dr. Klein has gone on record with his negative results. Although there is more satisfaction in reporting positive therapeutic results yet Dr. Klein after his careful investigation of this method has done a real service in pointing where further investigation need not be pursued.

Dr. Klein (closing): These patients were told the object of the treatment was that of an amelioration of their symptoms. A few of them informed their friends that the "shots" were no good. The more sanguine types were certain that they felt better but the subjective element was ruled out and the check-up was made on the occurrence of seizures and their general condition. For the most part the patients were selected indiscriminately for calcium therapy by the other investigators. This work has been done chiefly in mental hospitals so that they probably fall into the psychotic group. No pregnancies were included in the literature that I reviewed.

THE FUNCTIONAL PSYCHOSIS AS A DEVELOPMENT OF PSYCHO-SEXUAL IMPOTENCY

JOHN HOLLAND CASSITY, M.D.

This essay is buttressed upon twelve cases from the rich mine of psychiatric material at Saint Elizabeths Hospital. He finds that the functional psychosis bears a relation to taboos and social prohibitions and that there is a retention of infantile love objects and modes of satisfaction in phantasy or even overt behavior. The content of the psychoses is replete with excuses for the heterosexual inadequacy. This impotency, he feels, may be traced with relative clarity to malignant preadolescent influences which register in the psyche rather than in the "sexual soma." He develops such data from the preadolescent period that the content of the psychotic cases included become intelligible. Much of the content is in itself a practically pure culture of those urges the expressions of which in the neurotic and more nearly normal individual are more effectively disguised. Attention is also directed to pernicious environmental factors in preadolescence and to the prevalence of impotency with gonadal changes resulting secondarily from the psychotic disorder rather than causing the latter.

DISCUSSION

Dr. Lind said that such an approach offers the only chance of understanding aberrant behavior, whether it affects society as a

whole or only the patient's adjustment to life. The cases quoted by Dr. Cassity are well known to me, in fact we have discussed many of them while this paper was in preparation, and I agree with the mechanisms as stated by him.

Dr. Sullivan said Dr. Cassity's contribution supports his contention that "the two factors preliminary to schizophrenia which we have identified are: first, the appearance of the disorder late in a long series of subjectively difficult adjustive efforts, and second, the presence in all our material of evidence that no one of the patients had achieved if only for a short time a definitely satisfying adjustment to a sex object." I hold this regardless of the fact that we have cases who had had intercourse several times a night throughout their married life. I still find no exception to the rule that preschizophrenics are invariably uncomfortable in their sexual adjustment.

It has not been my experience to encounter many psychotic individuals who were overt homosexuals in the sense of established sexual adjustment. I imagine Dr. Cassity's material, or that of any institution for the so-called criminally insane, would be unduly rich in this respect. But I wonder if the psychotic reactions in such people are not closely related to situational psychoses in the sense that they occur when the patient is placed in extraordinary difficulty and disappear rapidly on the release from situational pressure? I am convinced that the development of satisfactory homosexual adjustment is full sexual adjustment from a psycho-biological standpoint, and that it insures against schizophrenia as surely as does satisfactory heterosexual adjustment. The fear of becoming a pervert, as the laity call it, is a tremendous factor as Dr. Cassity emphasizes. The influence of the parents in providing the basis for psychotic development cannot be overemphasized. I share with Thom the notion that in every case of psychosis or other maladjustment, one will find a preëxisting unhappy home life of the parents.

There are a good many cases in which inversion can be ruled out, but in these one finds maladjustive phenomena which have taken the place of homosexual development. I have little sympathy for the notion of hereditary inversion. The vast material which ran through my hands in industrial and military work indicates that deviation of body type toward the feminine has but indirect and complex relationship to deviation of the sex goal. I should like to know something about negroes in regard to their evolution despite sensitizing influences: this somewhat in keeping with the observations of Professor Malinowski. Again in connection with Dr. Cassity's last group, I am reminded of material which I have encountered in the study of psychopathic personality. One of them had been graced by an all-wise providence with unusually large dimensions of the instrument used in heterosexual adjustment, as a result of which he was much in demand among the ladies of his environment. He developed serious alcoholism with suicidal activity when very drunk and epileptiform seizures in profound intoxication. He entertained me through the months I saw him by the vigor with which he could fall in love—and

the speed with which he recovered after the act. At his period of greatest illness he developed delusions of reference about me. In connection with these psychopathic folk, might I recommend two recent books: *You Can't Win* by Jack Black—a commendable autobiography of a criminal—and the anonymous *Great American Ass*—in which the family influences are remarkably lucid.

Dr. Noyes: I am surprised at the statements that the true invert is a product of sensitizing experiences rather than the result of biological deviation. I had looked upon impotency in the invert as due to a deviation rather than to a conflict growing out of homosexual desires.

Dr. Hadley: I am interested in Dr. Cassity's remarks on overstimulation. I have thought of it in the sense of injury and I know that there is much to support the development of psychic impotency from notions of evil and pain. Nevertheless I have been wary of formulating theories about castration after Stårcke found such a complex to have incidence from a cracked nipple. Since Dr. Sullivan has given us two references, I think *The Captive* by Edouard Bordet deserves honorable mention. The theme has to do with homosexuality in women and it is dramatized, cleverly.

Dr. Reede: I saw the dramatization of *The Captive* referred to by Dr. Hadley and I can agree that the entire theme is delightfully executed and the effects apt symbolizations. While I see only neurotics, I have no doubt that homosexuality is acquired. Dr. Cassity's conclusions are sound. I see the verification of this in the neuroses. I seldom see the adjusted homosexual, but I do see him in strange conditions. Recently I had two overt homosexual fellows to consult me in regard to unrequited love. Their reactions were much like girls in this respect. I have one homosexual patient who, very much devoted to his mother, crawled into bed with her and became so stimulated that his heretosexual strivings led him, thereafter, to give up his homosexuality.

Dr. D. M. Bullard: Why do we not see both husband and wife developing a psychosis when there is sexual maladjustment?

Dr. Cassity (closing): In regard to Dr. Noyes' question concerning homosexuality being an inherited affair, I wish to state that my attitude is embodied in the concept that an individual is endowed with certain patterns of love energy, which possess infinite possibilities for alteration by the ontogenetic milieu. Consequently if one's patterns of energy assume homosexual qualities, it is through unfortunate pre-adolescent influences. I draw my conclusions from material elicited from psychotic cases, psychically impotent. I am glad Dr. Bullard and Dr. Reede mentioned the female phase of the impotency question and I regret that my study was confined to males. My only idea about women is based purely on the castration theory of the little girl fancying herself castrated upon observing that her brother or father has something that she has not. I am in accord with Dr. Hadley's remarks in reference to Stårcke. Regarding Dr. Sullivan's allusion to the negro's lack of inhibitions, it is interesting to recall Dr. Malinowski's work among the Melanesians of the Trobriand group.

These people as children freely indulge in the sex perversities (exclusive of incest) which according to Freud normally belong in this period. As a result the perversions of adulthood as well as the neuroses are rare. As to the psychic impotency concept I am quite willing to admit that the idea may be more deep-rooted than I have indicated, and may very well be related to the Death-Evil preconcept of Sullivan as developed by Hadley. I am delighted that Dr. Reede's work among the neurotics is in accord with my observations.

CURRENT LITERATURE

I. VEGETATIVE NEUROLOGY.

1. VEGETATIVE NERVOUS SYSTEM.

Kümmell, H., Jr. SURGERY OF THE SYMPATHETIC. [Beit. z. Klin. Chir., Vol. 135. J. A. M. A.]

Kümmell analyzes the outcome of resection of the cervical sympathetic in 21 cases, and of periarterial sympathectomy in 59 (bilateral in 23)—a total of 23 cervical and 82 peripheral sympathectomies. Improvement was evident in all at the first after the decortication of the artery, and the cure has persisted to date in 3 of the 4 cases of Raynaud's gangrene; in 2 of 3 freezing gangrene cases; in one of 3 diabetic gangrene cases; in 3 of 8 trophoneurotic lesions in a stump, hand or foot, and a tabetic with trophic ulcers. Lancinating pains were cured only temporarily in 2 out of 3 cases. A cure was realized only in 3 of 11 leg ulcer cases, and a roentgen ulcer was not modified. Eczema subsided in 4 of 5 cases, but the 7 patients with psoriasis displayed only transient benefit. In the one case of each, hyperkeratosis and dyshidrosis were clinically cured. The anatomy and physiology of the sympathetic and vagus are discussed, with a colored chart and other illustrations. The sympathetic ganglion just above is the storehouse for the pains from the lesion. Decortication of the artery is such a comparatively simple intervention, he says, that it deserves a trial in all the groups in which it has given any good results, especially for vasomotor-trophic lesions and eczema.

Claude, Garrelon and Santenoise. SOLAR REFLEX. [Jl. de phys. et de path. generale, Vol. XXII, No. 4.]

In certain subjects progressive compression of the epigastric region after some seconds causes a weakening of the pulse which is readily seen in the Pachon oscillogram. The authors after a short historical survey show that this is a reflex and not an hydraulic phenomenon due to compression of the aorta in the epigastrium. In fact real compression of the aorta in this region causes a rise in the amplitude of the pulse. Furthermore the reactions of neurovegetative drugs is considerably modified by the procedure. Thus 15 to 30 minutes after the subcutaneous injection of a milligram of adrenaline the phenomenon appears even in those who usually are refractory to the reflex. In dogs the authors have shown that the simple palpation of the solar plexus provokes the reflex more or less easily following closely the oculocardiac reflex. Section of the

splanchnics is followed by the disappearance of the solar reflex. The excitation of a single strand of a sectioned splanchnic provokes a very definite diminution of the differential pressure. The centripetal pathway of the reflex then is by way of the splanchnics. As to the centrifugal pathways these are more delicate to determine. In general the solar reflex is not usually accompanied by any acceleration of the cardiac rhythm. Furthermore, after destruction of the ring of Vieussens of both sides, and of the accelerators coming from the stellate ganglion, that is to say after section of the greater part of the accelerators, one observes a solar reflex as definite as previously. Double vagotomy is also without effect. According to the authors the results obtained lead to the probable conclusion one is dealing with an abdominal vasomotor reaction. The solar reflex is a reflex of the thoracic lumbar or true sympathetic. Its variations are nearly always in a sense the inverse of the oculocardiac reflex. The clinical technic of the solar reflex is as follows: One first reads the maximum oscillations of the Pachón instrument, then the epigastric pressure is applied at the level of the umbilical scyphoid line. The pressure should be made with both hands, deep and against the posterior diaphragm. It should be done gently but definitely and slowly, progressively. One should feel the aortic pulsations but should not attempt to occlude it. [R. Mourgne, Nîmes.]

Rother, J. ROENTGEN RAYS AND VEGETATIVE SYSTEM. [Deut. med. Woch. L., Aug. 22.]

Irradiation by X-rays of the abdominal skin of rabbits produces a lowering of the blood pressure which is more marked than after irradiation of muscles. In man skin irradiation produces a transitory lowering of the blood sugar followed by an increase. That the vegetative reflex chain from skin involves the suprarenals is shown for the blood changes do not occur if the suprarenals are removed.

Mitchell, H. S., and Johnson, F. ULTRAVIOLET RADIATIONS IN CONDITIONS OF EXTREME CALCIUM AND PHOSPHORUS DEFICIENCY. [Am. Jl. Physiology, Vol. 68, March.]

Ultraviolet light radiation not only aids in the healing of rickets caused by deficiency of either phosphorus or calcium, but also causes a retention of calcium when both factors are deficient and a consequent beneficial effect on the skeletal development and the organism as a whole through the action of the vegetative skin reflexes.

Leschke, E. METABOLISM AND THE SYMPATHETIC SYSTEM. [Brit. Med. Jl., May 2, 1925.]

In the section of Medicine of the Royal Society of Medicine on April 28, Erich Leschke, professor of medicine, University of Berlin, spoke on metabolism and the sympathetic system. He said:

That the whole interest of clinicians, pathologists, and physiologists of recent years had been absorbed in the study of the well marked and fundamental influence of the endocrine glands upon metabolism. At the time when he began his own experimental and clinical work on the hypothalamic centers of the autonomic nervous system and their influence on metabolism it seemed heresy to suggest that many troubles, like diabetes insipidus, dystrophia adiposogenitalis, and some forms of glycosuria, might be of nervous rather than glandular origin. The line of research [carried on by Lévy, Dresel, Spiegel and others in Europe and by White, Pottenger and Jelliffe in America] had, however, now been justified, and evidence had been brought together showing the importance of the rôle of the sympathetic centers in the diencephalon in the regulation of metabolism. He spoke first of his search for clinical evidence as to the causation of diabetes insipidus. His work had led him to abandon the pituitary theory and to look for some other pathogenic factor. In clinical pathology the alterations which led to diabetes insipidus were chiefly those involving the infundibular region and the tuber cinereum. In one well known case of diabetes insipidus occurring after a gunshot wound, the bullet was found not in the sella but in this region. A few cases had been reported where diabetes insipidus arose after an attack of epidemic encephalitis; he had also seen the disappearance of diabetes insipidus after encephalitis, and it was known that epidemic encephalitis was a cerebral disease, not a glandular one. The frequent occurrence of diabetes insipidus after injuries to the skull was explained by the fact that the infundibular region was one of the most exposed parts of the brain to injury. He instanced the case of an officer who, after a shell explosion, wounding his forehead, immediately developed bitemporal hemianopsia and persisting diabetes insipidus. In many of these cases diabetes insipidus persisted for life, and the presence of nervous troubles, with the absence of real pituitary symptoms, was in favor of the theory he had advanced—that is, the diencephalic as against the pituitary theory. He had dwelt perhaps somewhat too long on diabetes insipidus, but it seemed to him to afford an interesting example of the regulating influence of the autonomic nervous system on metabolism. Disturbance of this regulation led to polyuria, or, in slighter cases, only to diminution of urine concentration. It was of the greatest importance to make a thorough histological examination in cases of diabetes insipidus coming to autopsy. He had seen one case from his own clinic with normal hypophysis and exclusive degeneration of the supraopticus. Similar cases had been published in Paris. Histological examination in these cases would make for a better localization of the sympathetic "centers" (if it was allowable to use this inexact term) in the diencephalon or interbrain, and to establish their relation to the pituitary body. [See Jelliffe and White, *Diseases of Nervous System*, 4th Ed.]

Professor Leschke came next to a discussion of dystrophia adiposo-

genitalis. There was hardly any part of the hypophysis or its neighborhood which had not been thought of as furnishing the cause of this interesting anomaly. With regard to the posterior lobe, he had an impression, from animal experiments and from a case of isolated posterior-lobe destruction by an epithelioma, that it had not much influence either on growth or on metabolism. Destruction or atrophy of the anterior lobe nearly always gave rise to genital atrophy. Obesity following hypophysectomy had been observed by Cushing and others, but lesions of the infundibular region could not be excluded, the more so as Victor Horsley in his experiments did not obtain obesity. On the other hand, all the classical phenomena of Fröhlich's syndrome could experimentally be reproduced by mere lesion of the diencephalon between the tuber cinereum and the corpora mammillaria. The post mortem findings in more than ninety cases clearly demonstrated how unsatisfactory the pituitary hypothesis was. In some cases the lesions had been found in the anterior lobe, in others in the posterior, in a third group in the pars intermedia and ductus infundibularis, and in more than twenty of the cases the pituitary gland had been found to be quite normal, or so slightly affected that it could not be regarded as impaired functionally. The pituitary theory, which formerly held the field, had now, he thought, weakened. His own view was that the diencephalic centers always played the foremost part in the development of dystrophia adiposogenitalis, but he did not deny that the pituitary body had a great influence upon the function of these centers and that its internal secretion was indispensable, not only for normal growth and sexual development, but also for normal metabolism. It was more than probable that the sympathetic centers regulating metabolism and sexual development were not identical, though closely related. He mentioned one variation of dystrophia adiposogenitalis which he had met with in four cases; this included a most characteristic skin pigmentation, hundreds of small naevi, like those of Recklinghausen's disease, from which the condition was distinguished by the absence of neurofibromata and the presence of signs of certain endocrine and sympathetic disturbances. This syndrome, which he was convinced was not uncommon, he proposed to call "dystrophia pigmentosa."

Finally Professor Leschke mentioned diabetes mellitus. It might seem wrong to associate the diencephalon with diabetes, now that the pancreatic origin of diabetes had been definitely proved by the success of insulin therapy, but pancreatic activity, like any other glandular function, was under the regulating influence of the sympathetic nervous system. He was convinced that disturbance of sugar tolerance and blood-sugar level was due to involvement of the interbrain rather than to the derangement of pituitary function. Among 190 cases of acromegaly he had found glycosuria or hyperglycemia in 82. He had also found a true combination of diabetes mellitus and insipidus. The impairment of urine

concentration was hidden by the presence of sugar, which gave apparently normal figures of specific gravity. Both diabetes and obesity had been observed to develop after tumors and inflammations of the diencephalon and its base. There seemed no doubt that disturbances of the regulative function of the interbrain between the tuber cinereum and corpora mamillaria gave rise to lowering of carbohydrate metabolism and obesity, those of the corpus striatum to hyperglycemia and glycosuria. His general conclusion was that a close relation existed between endocrine glandular activity and sympathetic nervous regulation. He pleaded for a more synthetical point of view, like that of the Hippocratic school in olden times, which had been neglected in the past century in favor of the analysis of symptoms. He was quite aware of the hypothetical character of many of the views he had expressed, but he thought it was well if at the base of scientific progress there was some imagination—and even some phantasy.

Dr. F. Parkes Weber said that he had recently had the opportunity of examining a few cases allied to the rather rare types referred to by Professor Leschke. Since January, 1923, he had occasionally seen a man (Hebrew), then aged 39 years, with retinitis pigmentosa, obesity, and sexual impotence—an isolated (nonfamilial) case, and not a typical case of dystrophia adiposogenitalis. His attention had been specially drawn to the subject by Solis-Cohen and Weiss of Philadelphia, who had published their family group of similar cases in the current number of the *American Journal of the Medical Sciences*. At a recent meeting of the Neurological Section of that society Dr. Douglas McAlpine had demonstrated an isolated case of retinitis pigmentosa with hypopituitarism and polydactylism in a boy, aged 15 years. Recently Dr. Adolphe Abrahams had shown him a man, aged about 40, whose whole body was covered with small blackish pigment naevi (lentigines), and who had a peculiar excess of the soft parts of his fingers and toes, with ulnar deviation and over-extensibility of the fingers, but not the typical dystrophia adiposogenitalis mentioned by Professor Leschke. He (the speaker) regarded this case as allied to Recklinghausen's disease and tuberous sclerosis of the brain, the patient having likewise a gradually progressive hemiplegia of the right side which might be explained in that way. The pigment naevi might be regarded as taking the place of the facial naevi of the adenoma sebaceum kind which had been noted in a good percentage of cases of tuberous sclerosis. With regard to the peculiarity of the patient's fingers and toes, he could not help thinking of the rare cases of clubbed fingers of congenital or early developmental origin, which might be familial; these he had recorded in the *British Medical Journal* in 1919 (ii, p. 379). With regard to the consideration of the two rare combination types just referred to, he drew attention to the following points: the retinitis pigmentosa might be represented by an atypical pigmentary degeneration of the retina; the dystrophia adiposogenitalis

might be incomplete and atypical; the symptoms of Recklinghausen's disease might also be incomplete and atypical; the other occasionally associated developmental abnormalities, such as polydactylism or congenital malformation of the heart, might be various in kind or degree. He believed that the association of polydactylism with definite or incomplete dystrophia adiposogenitalis and retinitis pigmentosa was to be regarded as analogous to the occasional association of congenital cardiac abnormalities with mongolism.

Dresel, K. and Sternheimer, R. LIPIDS AND VEGETATIVE SYSTEM. [Klin. Woch., Vol. 4, April 23.]

By means of a mixture of lecithin and cholesterol in Ringer's solution these authors have found that potassium and cholin augment, calcium and epinephrin lower the surface tension. The action of cholin was inverted in the presence of calcium, potassium that of epinephrin. Reactions to perfusion experiments showed a parasympathetic reaction produced by lecithin, a sympathetic by cholesterol. The lipoids offer in their opinion the physicochemical foundation through which these mechanisms act.

Bruce, H. A. PLEXIFORM NEUROFIBROMA OF SOLAR PLEXUS. [Brit. Jl. Surgery, Vol. 11, Oct. J. A. M. A.]

Constant pain in the back in the right lumbar region, accompanied by tenderness on deep pressure, usually relieved by a belladonna plaster, were the subjective symptoms in Bruce's case. The roentgen ray disclosed a mass external and posterior to the stomach, pressing on the lesser curvature and also on the transverse colon. A diagnosis of "tumor of the pancreas" (probably a cyst) was made. Under anesthesia, the tumor, which was very hard and nodular, could be moved freely from side to side, and to a less extent from above downward. At operation the tumor mass was found to be about the size of a grape-fruit, distinctly nodular, and appeared to be connected with the pancreas. A thorough examination revealed it lying behind the pancreas. The patient recovered from the immediate effects of the operation, but died suddenly the next morning. The majority of the tumor was made up of nonmedullated nerve fibers intimately surrounded by fibrous tissue.

Leriche, Rene. SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM. [Press Méd., Vol. 32, p. 785.]

Surgery of the sympathetic nervous system is yet in an empirical state. It is necessary that surgery of the sympathetic be directed, until better informed, only to the rami and posterior ganglia, avoiding systematically, contrary to what we have done until now, the cutting off of the ganglia. Post-operative investigations are so incomplete that we really could not use the existing observations to affirm that the suppression of the ganglia does not injure the body. The ganglias of the lateral chain

are not only the centers where the somatic and splanchnic post-ganglia originate; they are more likely, the points of coordination of the reflexes which at all times, govern the metabolism of the whole system. It is impossible to believe that the body would not feel this deprivation. It is antiphysiologic to suppose that to remove a few sensitive fibers in a small region very localized, we can, without damage destroy the center of association of the reflexes which coordinate the needs of an immense area. The remedy would be worse than the disease. To say that there is no physiological effect because the immediate therapeutic effect is good, is not true. It is criminal to say that this formidable nervous apparatus has no uses. When life is in danger one is justified in taking chances, but palliative measures may be worse than the disorder.

It is well known that it is easier to operate on the ganglia than on the rami. In abolishing the area of distribution one is almost certain of cutting all the threads. Would it not be better to first try to determine the points of passage of these conductions and aim to touch only these?

Despite the affirmation of Jonnesco bearing on the harmlessness of the removal of one or even two of the sympathetic cervical chains of the superior ganglion at the first thoracic enclosure, one must admit that it has its inconveniences. Danielopolu, very justly remarked, in his sensible criticism, that the lowly ganglion taken away in the cervical-thoracic sympathectomy, contains (besides centripetal fibers which furnish sensibility to the thoracic organs) centrifugal fibers which are the cardiac accelerators, the pulmonary vasoconstrictors, the coronary vasomotors, the vasomotors and the sudorific nerves of the head and arms, the nerves of the iris and the muscle of Müller. It is not indifferent of interrupting in an angina with weakened myocardium, the motor filaments of the heart, and the pulmonary and coronary vasomotors; in fact 3 out of 6 patients operated on by Jonnesco had acute edema of the lungs and 2 died four days after the operation. The surgical treatment of angina of the chest certainly does not consist in removing the cervicothoracic ganglionic chain. The idea is good but the results are poor. It is necessary to determine, with precision, the pathways of the centripetal impressions of the cardioaortic region: Surgery of angina will not be justified until we find these.

In the treatment of Basedow's disease by sympathetic surgery, care should be taken to divide only the cardiac filaments, the thyroid nerves and the ocular nerves which come from the sympathetic, without suppressing the superior cervical ganglion. With a little care, only the nerves which escape, from the superior pole, the internal edge and the inferior pole can be cut, leaving intact the communicating cervical rami.

Rasdolsky, I. REFLEX AND SENSORY PHENOMENA WITH SURGICAL DISEASE. [Beiträge z. klin. Chir., Vol. 135. J. A. M. A.]

Rasdolsky examined 188 patients from this point of view, including eighty-nine examined during and after the operation. The most frequent

phenomenon noted was hyperalgesia of the posterior wall of the outer ear. A prick, pressure or tap of a hammer at this point induced violent, sometimes unbearable pain in practically every case of an acute inflammatory process in the internal organs (especially cholecystitis, perforated ulcer or appendicitis), ptosis, pylorospasm; disturbance from adhesions and heart defect, and always on the side nearest the lesion, or most pronounced on that side. The only failures in the entire list were in two cases of gastric cancer and two of pylorospasm in which there was very little pain anywhere, and two of kidney colic two days after recovery. "The sensory phenomena and reflexes from the vegetative nervous system form a periscope through which we can inspect conditions in the internal organs." Even the common headache with affections of the internal organs usually begins in or is restricted to the side of the lesion. In one case of pains from sagging kidneys, the left headache subsided after nephropexy on the kidney on that side but persisted on the right. Pain on pressure of the emerging points of the trigeminal and occipital nerves was pronounced on the side of the lesion in about 75 per cent, and anisocoria in nearly 90 per cent. The uvula was displaced away from the diseased side in 60 per cent, but this displacement is occasionally seen in the healthy. A distinct difference in the color of the iris was manifest in more than 60 per cent; in 80 per cent the color looked faded, and in 20 per cent it looked brighter than its mate. This difference always disappeared on recovery. Lacrimation on the affected side was more pronounced in some of the cases. The same symptom was observed with affections of the most diverse organs and paralleled them in intensity.

Laignel-Lavastine. SYMPATHECTOMY. [Rev. de Chirurgie, 1924.]

In his recent book, on the pathology of the sympathetic system, this author points to the new avenues open to surgeons for the successful operative treatment of sympathetic factors which, thanks to the better understanding of the anatomy, physiology and pathology of the vegetative nervous system, is now recognized as active in manifold clinical syndromes. From the internist's and neurologist's point of view he also shows how essential it may be for the surgeon to be a competent neurologist and even more important to have psychiatric insight so as not to destroy pathways operating under emotional stimuli rather than being somatically diseased.

Valerio, A. ABDOMINOCARDIAC REFLEXES FROM SURGICAL STANDPOINT. [Brazil Medico, Nov. 8, 1924, J. A. M. A.]

Valerio relates that his systematic study of patients before operations has revealed that the Livierato sign (vasoconstriction when the abdominal sympathetic is irritated by striking the anterior abdomen along the xiphoid-umbilical line) was always positive in patients with, even incipient, disease of the myocardium. It thus warns against the Trendelenburg

position and other procedures making much demand on the organism. The Prevel sign is the acceleration of the heart beat when the reclining subject changes to the erect position. This abdominocardiac reflex is the reverse of the oculocardiac reflex, in which the heart action is retarded by the test.

Jacobi. MECHANICAL EFFECT OF ATMOSPHERIC PRESSURE AT A HIGH ALTITUDE. Pt. I. Influence of Elastic Forces upon the Effects of Change in Atmospheric Pressure. [Arch. f. exper. Path. u. Pharmak. Vol. 104, Nos. 3, 4.]

Jacobi reports some investigation of the extent and manner of the effect upon the body of the change in atmospheric pressure. This need not be consciously perceptible. Examination simply by manometer reveals that where there is equally distributed action of atmospheric pressure upon all surfaces of the body or system, change of the strength of the pressure by no means necessarily produces the same effect upon all internal portions of the system. The author refutes the assumption of Zuntz that according to physical laws change in atmospheric pressure cannot produce a mechanical effect, *e.g.*, alteration of the distribution of the blood. When other forces, such as elastic forces unequally distributed upon the surface, directed perhaps against atmospheric pressure, become effective in the body the change in atmospheric pressure can affect unequally the more deeply located parts.

Jacobi. MECHANICAL EFFECT OF ATMOSPHERIC PRESSURE AT A HIGH ALTITUDE. Pt. II. The Influence of Gravity upon the Effect of Atmospheric Pressure in Our Body. [Arch. f. d. exper. Path. u. Pharmak. Vol. 104, Nos. 3, 4.]

The author continues his investigations by testing the effect of atmospheric pressure upon the hip joint. By marked lessening of the pressure (less than 655 mm. to 1200 m. altitude) the power of traction of the leg exceeded the atmospheric pressure acting from below. A negative pressure arose in the cavity of the joint. The author suggests that there may result an increase in the synovial fluid by diffusion from the surrounding tissue, which might be followed by separation of the joint surfaces. Reflex increase of tonus of the muscles together with a gradually stronger development and tenseness of the ligaments would normally prevent this so that even at great heights no injurious relaxation of the surfaces would take place. Jacobi believes that the sense of freer movement in mountainous regions may be explained from the lessening of the friction in movement. At great heights, however (above 3000 m.) increased muscular action produces a greater feeling of fatigue. The results obtained in treatment of joint diseases at higher altitudes may depend in part upon nutritive and circulatory changes brought about by the mechanical action of lowering of atmospheric pressure.

Royle, N. D. SYMPATHETIC RAMISECTION. [Med. Jl., Australia, June 14, 1924.]

This clinical paper (details repeated in America and in England), describes his technic for performing lumbar ramisection by removing the rami communicantes only. Danger of interfering with the functions of the intestines or the bladder is minimized as long as the medially directed fibers from the second, third and fourth lumbar ganglia are not interfered with. Division of the abdominal sympathetic trunk below the fourth ganglion only affects the sympathetic fibers traveling with the fifth lumbar and the sacral nerves.

Byrne, J., and Einthoven, W. FUNCTION OF THE CERVICAL SYMPATHETIC AS MANIFESTED BY ITS ACTION CURRENTS. [Am. J. Physiol., 65, 350, Med. Science.]

In this important paper the action currents of the cervical sympathetic have been demonstrated for the first time. It is shown that in this way the functions of the cervical sympathetic can be studied. Of the numerous results the following may be mentioned. The reflex action currents which induce pupillary movements disappear after decerebration. This means that peripheral stimulus effects, *e.g.*, from a paw, first take their way to the brain as far cephalad as the diencephalon at least, and thence back again through the special cord to the cervical sympathetic. The reflex action currents in the cervical sympathetic which cause salivary secretion and vasoconstriction persist after decerebration. Apnea may weaken or even abolish sympathetic function.

Crozier, W. J., and H. Federighi. PHOTOTROPIC CIRCUS MOVEMENTS OF LIMAX AS AFFECTED BY TEMPERATURE. [Jour. Gen. Physiology, Vol. 7, No. 1.]

The theory of animal phototropism requires for particular instances a knowledge of the action of light as exerted through each of two bilaterally located receptors functioning singly. The measurement of "circus movements" which this involves must be concerned with such aspects of the reaction as are demonstrably dependent upon the effect of light. The negatively phototropic slug *Limax maximus* exhibits very definite and continuous circus movement under vertical illumination when one eye-tentacle has been removed. The amplitude of the circling movement measured in degrees deflection per cm. of path as an index of maintained differential tonus, is intimately related to the concurrent velocity of creeping. Analysis of the orienting mechanism is facilitated by the fact that in gasteropods such as *Limax* the animal creeps by means of the pedal organs, but orients (turns) by a totally distinct set of muscles in the dorsal and lateral regions of the body wall. The expression of the phototropic orienting tendency, with illumination constant, is greatly influenced by the temperature. Above a zone centering at 15°, the amplitude

of turning (degrees per cm. of path) is determined by the temperature in accurate agreement with Arrhenius' equation for chemical reaction velocity, with the critical increment $\mu = 16,820$; and the rate of creeping is progressively less as the temperature rises, μ for its reciprocal being 10,900. Below 15° , the velocity of creeping becomes less the lower the temperature, μ being again 16,800; while the amplitude or orientation is limited merely by the velocity of creeping, its reciprocal being directly proportional thereto.

Measurements of *Limax circus* movements in terms of turning deflection as function of light intensity must therefore be carried out at a temperature well above 15° .

The analysis provides a gross physical model of how an end-result may be influenced by temperature according to the effect of temperature upon each of several interconnected processes when the "temperature vs. effect" curves for these processes dynamically intersect. It is pointed out that a certain type of unpredictability (quantitative variability) in animal behavior under "normal" natural conditions probably results from dynamic equilibrium there obtaining between diverse mechanisms competing for effect or control (in the present case, the creeping mechanism and that for turning, in the range $14-46^{\circ}\text{C.}$). It follows that the unraveling of the elements of conduct necessitates experimentation under diverse abnormal conditions favoring individual mechanism of response. The quantitative investigation of animal activities from the standpoint of their associated critical thermal increments promises to provide a means for the classification and identification of inner processes concerned in the determination of behavior. [Author's abstract.]

Arrillaga, F. C. ELECTROCARDIOGRAM AFTER SYMPATHECTOMY. [Sem. Méd., Vol. 31, Sept. 18.]

This is an interesting study showing the electrocardiogram reactions partially observable following cervical sympathectomy as it was carried on upon three patients who had angina pectoris.

Smith, F. J., and McClure, R. D. CERVICAL SYMPATHECTOMY FOR RELIEF OF ANGINA PECTORIS. [Surgery, Gyn. and Obstet., Vol. 40, Aug. J. A. M. A.]

Smith and McClure report two cases in which a cervical sympathectomy was done for angina pectoris. In one of the cases the operation was done on both sides. Both patients had considerable relief from pain after the operation, as to the number and severity of the attacks. The authors stress the fact that while in many cases the resection of the cervical sympathetic in angina pectoris, unilateral or bilateral, may greatly lessen the number and minimize the intensity of the painful attacks, it must not be counted on to secure complete relief from pain, unless the first thoracic ganglion is included in the resection. The

resection should be done first on the side which has shown the greatest or most severe radiation of pain, and followed later by a similar operation on the other side, if complete relief is not obtained after the first one. [See warning note of Leriche in previous abstract.]

Laignel-Lavastine, M. MEDULLARY SYMPATHETIC SYNDROMES. [Pathologie du Sympathique, F. Alcan.]

As with their encephalic and bulbar homologues these spinal syndromes bring about vascular spasms. There is little question of the clinical facts. Brown-Séquard (1861), called attention to the contraction of the pial vessels when the hilum of the kidney was tightly ligatured. He spoke of these as reflex phenomena, with which hypothesis Jaccond and Vulpian were not in accord. The author makes a broad grouping of these spinal sympathetic syndromes. There is no reason to deny the reality of these medullary symptoms, nor to overlook their chief anatomical substrata such as pareses or paresthesias because of their short duration or their rapid onset. Thus, for instance, Stewart has observed three brothers who presented a familial paroxysmal gangrene closely resembling Raynaud's syndrome, and has put the question if paroxysmal family paralyses are not due to recurring vasomotor spasms chiefly involving the anterior spinal artery which nourishes the anterior horn. Berti in 1914 published an important monograph tending to show that the extracord pains in the syndrome described by Schanz are repercussions of disturbances in the sympathetic plexuses.

In the course of an operation for the removal of an intradural tumor Martel (Rev. Neur., 1917, 240), observed a fall in the arterial tension, a marked hyperthermia and sudden death. At the autopsy there was also a marked gastric and intestinal hyperemia and some accompanying hemorrhage. This acute solar syndrome has been observed since by Vincent and Guillain and Barré have shown the possibility of sudden death of bulbar anemia consecutive to vasoparalysis of the abdominal viscera. Acute and subacute pulmonary vasodilatation with edema has been demonstrated by Vincent after ablation of oblong, nonadherent tumors of the superior dorsal or cervical region and also following spinal fracture involving the 3d, 4th, 5th dorsal vertebrae and especially when the corresponding posterior roots were compressed. With others he has reproduced the syndrome by electrical excitation of the 2d, 3d, 4th posterior spinal roots.

These sympathetic medullary syndromes often show predominant cutaneous reactions. They are continuous or intermittent. Vulpian rendered classic the description of some of the continuous skin phenomena and Laignel-Lavastine in his thesis on the "plexus solaire," following the studies of Onuf and Collins, Barré and Schropf (Rev. Neur. Mch. 1920), has paid particular attention to them. Intermittent cutaneous reactions are less frequently seen. Mme. Dejerine and Jumentié have

described an irritative sympathetic syndrome with well localized pilomotor and sweating anomalies (Soc. de. Neur. de Par., Nov. 3, 1921). It occurred in an intramedullary tumor of the 3d, 4th dorsal segments. Babinski and Jumentié have described an analogous case (Rev. Neur. Soc. de Neur., Dec. 1, 1921). There was a unilateral irritative spinal sympathetic syndrome with sweating, pilomotor, vasomotor and thermic changes of the left side of the body below the 10th-11th dorsal dermatome. The crises lasted 6 to 7 hours at a time with periods of complete quiescence. [Author's abstract.]

Robin. CALCIUM METABOLISM AND THE GLYCEROPHOSPHATES. (J. A. M. A., Vol. 82. 899.)

The importance of the inorganic constituents of the blood is becoming increasingly evident as the study of vegetative neurology widens. In this editorial comment one reads: "In speaking of the blood as a 'physiologically balanced' solution, one cannot overlook the share which the inorganic ions must have in the maintenance of neutrality, the development of osmotic pressure and other physicochemical reactions. It may be worth while, therefore, to call attention to the latest evidence regarding the distribution of some of the most prominent inorganic elements of the blood, a knowledge of which is likely to be necessary in connection with a variety of problems. Numerous investigators now agree that the concentrations of sodium, potassium, calcium and magnesium are singularly constant in human serums. As recent years have witnessed the introduction of accurate methods for estimating the content of these important elements in small amounts of blood, it has become possible to secure data of clinical value, because even small variations from the little varying normal may point to pathologic conditions." It is not necessary, at this time, to discuss the usefulness of the inorganic compounds, generally in diseased conditions, but it may be of value to refer to the use of calcium and phosphorus as glycerophosphates. Pasqualis has shown that the action of calcium phosphate and of calcium glycerophosphate differ physiologically and pharmacologically. Thus the secretion of phosphoric acid with constant diet is increased in the first 24 hours when calcium glycerophosphate is administered, whereas with calcium phosphate an increase in calcium metabolism can only be recognized after two days. The reason for this is that calcium glycerophosphate is soluble in water and much more rapidly absorbed and utilized than calcium phosphate; and because of this, smaller doses suffice. According to Robin, calcium glycerophosphate not only increases phosphate-metabolism, but also increases the solid constituents of urine, and its use is indicated in those conditions in which there is diminution of nitrogen and sulphur. It is especially valuable in the depression incident to phosphaturia, convalescence from influenza and other infective diseases, and in various neurasthenoid conditions which are manifest after toxemias or that accompany unconscious masturbatory mental activities.

Glaser, F. VEGETATIVE NERVOUS SYSTEM. [Med. Klinik, Vol. 4, Feb. 1.]

An interesting summary of some of the recent literature on the significance of the vegetative nervous system in health and in disease. The entire metabolism of the body is regulated by the vegetative nervous system. Anaphylactic phenomena tuberculin reaction and phenomena of scarlet fever, depend on it. An atropinized heart does not respond to vagus stimulation.

Rousselot, G. NERVOUS AND MENTAL COMPLICATIONS OF ANTITYPHOID VACCINATION. [Thèse de Paris, No. 129, B. M. J.]

The nervous and mental complications in typhoid fever are comparatively rare, but important. Among more than 3,000 patients admitted to the Nantes psychiatric center from 1914 to 1919, Benon found only four or five cases in which the origin of the affection could be attributed to this cause. Laignel-Lavastine, at the center for psychoneuroses of the military government of Paris in 1916, had only five cases in which neuropsychic symptoms developed after antityphoid inoculation—namely: (1) hemiparesis of the right lower facial with dysarthria due to cerebral syphilis, which developed a few hours after the injection of vaccine; (2) functional scoliosis, which occurred after the third injection and disappeared in the dorsal decubitus; (3) mental confusion, which occurred after the first injection in a subject with an extremely emotional constitution; (4) hysterical paralysis following the second injection in a man who had a similar paralysis nine years previously; (5) simulation in a subject with profound mental debility. After the fourth injection the patient was unable to stand, although there were no physical signs to account for the sudden paraplegia. Mairet and Piérou observed eleven cases at the neuropsychiatric center of the sixteenth region where typhoid or paratyphoid inoculation was followed by epilepsy, hysterical attacks, chorea, circular insanity, and melancholia. Rousselot reports three personal cases. The first was that of a man with an hereditary history of insanity who, during a period of five years following antityphoid inoculation, presented alternate periods of maniacal excitement and asthenic depression. In the second case the injections were followed by general weakness and disturbance of gait necessitating admission to hospital. Complete recovery ultimately took place. In the third case the injections were followed by attacks of hysteria major.

Royle, N. D. SYMPATHETIC RAMISECTION AND MUSCLE TONE. [Med. Jl. Australia, Sept. 27, 1924, J. A. M. A.]

A brief review of his work on ramisection is presented by Royle and the indications for operation are summarized as follows: The main indication for sympathetic ramisection is the presence of excessive plastic tone. The greatest benefit comes to those patients whose movements are obstructed by the tendency to maintain positions attained by active contraction. The second necessity is adequate cortical control. No beneficial

result can be expected if the cortical areas concerned with the representation of movement or of the position of the limbs are destroyed. Similarly, any process which effectively blocks cortical control, must constitute a contraindication, since gain is a physical impossibility and the uninhibited activity of subcortical centers would so dominate the clinical picture that the mere removal of plastic tone would have little beneficial effect. Imbecility and some degrees of mental deficiency would render operative treatment a waste of time and energy. To justify surgical interference the lesion must not be progressive. This particularly applies to spinal conditions and more especially when the spinal lesion is accompanied by muscular wasting.

Wiedhopf, O. SENSITIVITY OF THE SYMPATHETIC TO ANESTHETICS. [Münch. med. Woch., Vol. 71, Oct. 31.]

This short study tends to show that the vegetative fibers are more readily influenced by procain than are the cerebrospinal nerve fibers, and that so far as the latter are concerned the sensory arc segments are more influenced than the motor arc segments.

Weaver, J. Calvin. THE VEGETATIVE NERVOUS SYSTEM IN HEALTH AND DISEASE. [Journal of the Medical Association of Georgia, Vol. XIV, No. 2.]

The author describes the evolutions of the nervous system from the chemical stimuli or chemiotaxis for self-preservation in the plasmodium to the more recent development of a central organ in higher animals. The anatomy of the sympathetic and autonomic systems is reviewed, stress being placed on the close relationship between the vegetative system and the ductless glands in various affections of the nervous systems. A parallel is drawn between the function of the sympathetic and the autonomic systems, the former serving to prepare the body for a struggle and defense, the latter serving for bodily conservation. Vagotonia is described as ill health in functional form, while the distinction is made between training a child in early years and teaching later as the mentality becomes sufficiently developed. As man is a subconscious creature first, advantage must be taken of training (which deals with the instinctive) in the formative stage of youth. Persistent intelligent patience will gradually beat down a broad pathway through the nervous network that will result in helpful habits that will last throughout life. The different morbid reflexes are mentioned such as "Neurogenic Irregularities of the Heart," "Spasmodic Diplopia," "Asthma of Neurogenic Origin," "Reflex Dyspepsia," "Spasmodic Stricture," etc., with an explanation of how they come about along with practical examples of the far reaching effects of such reflexes.

As the variants or nervously ill seem destined to increase in number, the play of affinities and reciprocity of sympathies between the intellectual

and material portions of our natures must be more closely attended to to prevent the structural or organic changes resulting from prolonged interference with perfect functioning. [Author's abstract.]

Guillain, G., and Alajouanine, T. HYPOTHALAMUS SYNDROME. [Presse Méd., Vol. 32, Dec. 20.]

In this clinical case of a sixty-three year old woman the authors describe a new syndrome which they hold is quite specific: There is paresis in one-half of the body, usually without Babinski, no spontaneous pains as in the thalamic syndrome, choreo-athetoid movements of the hands, derangement of coördination and tonus of a cerebellar type. The lesion, located in the region below, behind and outward of the optic thalamus touches on the pyramidal tract, the sensory and optic tracts, superior cerebellar peduncle and certain extrapyramidal radiations. They term this topographical spot the "carrefour hypothalamique."

Hummel, H. CALCIUM AND THE ACID-ALKALI BALANCE. [Klin. Woch., Vol. 3, Dec. 23. J. A. M. A.]

Hummel points out that rickets and spasmophilia, although belonging clinically to the same group, have an opposite tendency in metabolism—acidotic in rickets, alkalotic in spasmophilia. He sees the common moment in the changes connected with the calcification of bones. Calcium carbonate can be deposited from the bicarbonate only in an alkaline reaction. This reaction of the medium disappears when the calcium carbonate has precipitated. Since the process is reversible, high degrees of alkalinity occur if the precipitation of calcium carbonate is prevented. Calcified bones give an alkaline reaction, while the osteoid tissue is acid as long as it is unable to take up lime. The gravest cases of rickets are not spasmophilic, because there are so many acid proteins of the osteoid tissue that the hydroxyl ions are easily saturated. A spasmophilic condition with its alkalosis is already a step toward the cure of the rickets.

Arnoldi, W. VEGETATIVE SYSTEM AND LYMPHATISM. [Münch. med. Woch., Vol. 71, Dec. 12. J. A. M. A.]

Arnoldi believes that the predominance of the parasympathetic system (including the nerves, hormones, ions and physical contact membrances) may cause chronic conditions of local or general stasis with swelling of organs and increased formation of lymph. He believes that it is an important condition for development of lymphatism. Atropin and thyroid treatment would seem rational to him.

Wiedhopf, O. MECHANISM OF NERVE BLOCKING. [Beiträge z. Klin. Chir., Vol. 135.]

These researches tend to show [also see his study in Münch. Klin. Woch., Oct. 31, 1924] that the vegetative nerves for the blood vessels

running in the spinal nerves, feel effect of local anesthesia first; then the sensory and motor nerves are involved. Return of function proceeds inversely. This effect is evident both subjectively and objectively. This local hyperemia can be utilized to demarcate in amputating for gangrene, and to detect spastic contraction of a vessel in case of nerve trauma. The data presented testify anew to the advantage of shutting off the circulation before operating. They suggest further that the drop in the blood pressure with splanchnic nerve blocking is a physiologic phenomenon. Intravenous drip infusion, with epinephrin, during the anesthesia can be used to advantage to prevent this drop in blood pressure.

II. SENSORI-MOTOR NEUROLOGY.

5. PEDUNCLES; MIDBRAIN.

Rogers, F. T., and Wheat, S. D. STUDIES ON THE BRAIN STEM No. 5.
[American Journal of Physiology, Vol. LVII, No. 2, Sept.]

In preceding reports attention has been directed to the poikilothermous condition of birds that follows destruction of the optic thalamus. This is not due to temporary shock effects for it persists as long as the animals live. Such animals must be kept at an atmospheric temperature of about 30° C. to continue in good condition, but in this way we have kept them alive for six to ten weeks after operation. The loss of ability to maintain a constant body temperature is not due primarily to a failure of the circulation, for it has been found that if the animals are kept in a warm incubator the arterial pressure shows little variation from that of the homothermous decerebrate bird with thalamus intact. This suggested that possibly there might be some depression of the thermogenic mechanism and we have therefore carried out determinations of the carbon dioxide elimination in pigeons rendered poikilothermous by decerebration and cauterization of the optic thalamus. There is, of course, the uncertainty as to how strictly the carbon dioxide determination alone can be considered an index of heat production but it was assumed that with uniform conditions of diet or starvation it would not be essential. [Author's abstract.]

Schaller. CLINICAL AND ANATOMIC STUDY OF VASCULAR LESION OF BOTH CEREBELLAR HEMISPHERES. [Am. Arch. of Neur. and Psych., Jan., V, No. 1; J. A. M. A.]

A case is reported by Schaller in which there is a destruction of tissue in both cerebellar hemispheres with conservation of the vermis and the central vestibular system, and whose predominant symptomatology is marked dyssynergia, cerebellar catalepsy and scanning speech. Equally important from the standpoint of negative symptomatology is the absence of spontaneous nystagmus and of spontaneous errors of pointing

after Bárány. The absence of nystagmus is explained by the practically intact vestibular system. This case confirms the opinion of Wilson and Pike that rhythmic nystagmus or labyrinthine nystagmus consisting of slow and quick components is properly a symptom of vestibular disease. The symptoms of dyssynergia, dysmetria and dysdiadokokinesia were marked and characteristic. They would tend to confirm prevalent notions regarding cerebellar symptomatology. In contrast to the above symptoms was the conservation of trunkal static equilibrium as evidenced by the ease with which this patient maintained the sitting position. Cerebellar catalepsy in this case is another example of conserved static equilibrium contrasted with disturbed dynamic equilibrium exemplified by the great incoördination in the extremities. From the anatomic standpoint, the principal findings are corroborative in general of the degenerations following cerebellar defects such as are demonstrated in cases of cerebellar lesions, animal experimentation, and particularly unilateral and bilateral agenesis of the cerebellar hemispheres. Worthy of mention, and perhaps throwing some light on the anatomic connections of the cerebellum and of the inferior olive, are the following considerations: 1. The destruction of the left restiform body may be brought into relationship with the destruction of the left dentate nucleus for the reason that the right restiform body is practically intact with an extensive destruction of both cerebellar hemispheres and conservation of the right dentate nucleus. 2. On the left side the degenerations in the central tegmental tract, circumolivary fibers, internal fibers of the olive, and Helweg's bundle seem to indicate a more or less intimate connection of these structures. 3. On account of the small tegmental lesion, which is in close vicinity to the central tegmental tract, the question must remain an open one as to whether this tegmento-olive-spinal degeneration is dependent on it or on the cerebellar lesions. In a careful study of the serial sections representing the tegmental lesion no actual defect in the bundle could be demonstrated due to softening. This lesion probably explains the degeneration of the left median fillet which it directly involves.

André, Thomas. DISEASE OF THE PONS. [Encéphale, Jan., XVII, No. 1.]

An unusual autobiographical case history in an intelligent man of fifty years who recorded his symptoms so accurately as to be able to trace the evolution of the sensory and motor disturbances.

Rasmussen, A. T. THE TECTO-SPINAL FASCICULUS IN THE CAT. [Proc. Amer. Assoc. Anatomists, in Anatomical Record, XXV, April 20, p. 148.]

The tectospinal fasciculus (descending fibers from the tectum of the midbrain) as found in the higher mammals has been variously described as to the completeness of its decussation, its termination in the spinal

cord, and its contribution to the medial longitudinal bundle. There are many disagreements on these points in the cat. Rasmussen has tested the origin, course, and termination of these fibers in a dozen cats by the Marchi method after extirpation of various parts of the midbrain. His results warrant these conclusions. (1) The fibers all cross the midline (decussating mostly in the dorsal tegmental decussation, but also to some extent dorsal to the aqueduct); (2) the degeneration on the same side as the lesion, which has been taken as evidence of direct fibers, is due to fibers from the unoperated side having crossed dorsal to the aqueduct and been cut after crossing; (3) tectospinal fibers cannot be followed by the Marchi method below the seventh cervical segment; (4) there is no evidence that fibers from cells in the superior and inferior colliculi descend in the medial longitudinal fasciculus. "The probable significance of the tectospinal fasciculus as a visual reflex pathway will be discussed." [Leonard J. Kidd, London, England.]

Nobécourt, P., and Paraf, J. THE SYNDROME OF THE OCCIPITO-CEREBELLO-VERTEBRAL ANGLE. [Presse Médicale, XXX, Oct. 25, p. 921.]

The writers showed a child which came into hospital with signs of cerebral compression, viz., headache, vomitings, and bilateral papillary stasis. The existence of a paresis of the external branch of the spinal accessory nerve with a hypoaesthesia in the area of suboccipital nerve and slight cerebellar signs enabled a localization of the tumor to be made. The child was successfully operated on for a tubercular gumma situated in the cerebello-occipito-vertebral angle. [Leonard J. Kidd, London, England.]

Miller, F. R., and Banting, F. G. CEREBELLAR STIMULATIONS. [Brain, Vol. XLV, No. 1, p. 104.]

According to these studies, the cerebellar cortex is excitable to electrical stimulation. The reaction chosen as a test was the inhibition of decerebrate rigidity evokable by stimulation of the surface of the cerebellum. Reasons are given for concluding that this reaction is induced as the result of a state of excitation in cortical neurones of the cerebellum.

Ingvar, S. ANATOMY OF THE CEREBELLUM. [Hygeia, December 16, Vol. 82.]

S. Ingvar concludes, after an exhaustive study of the anatomy of the cerebellum, that this organ instead of being a motor organ as is often held, depends in a marked degree upon the peripheral impulses it absorbs, just like all other reflex organs. The cerebellum is an organ of equilibrium, that is to say, an organ which, to preserve equilibrium, a dynamic postulate for all creatures, succeeds in neutralizing and influencing by reflex action the static and kinetic forces surrounding us due to the physical laws of gravity, etc. The author mentions Ramsay Hunt of

New York and Walshe of England as sharing his views. Everything seems to point toward the fact that the afferent peripheral impulses, upon which the reflex activity of the cerebellum depend, are of an exclusively static and kinetic nature. As the physical laws of gravity, etc., are common and identical for all, it is comprehensible why the cerebellum in all vertebrates offers not only the same histological picture but also develops according to the same morphological stages.

Putnam, T. J. INTERCOLUMNAR TUBERCLE, AN UNDESCRIBED AREA IN ANTERIOR WALL OF THIRD VENTRICLE. [Johns Hopkins Hospital Bulletin, Vol. XXXIII, No. 375, p. 181; J. A. M. A.]

A structure in the anterior wall of the third ventricle of the mammalian brain is described by Putnam which appears to be analogous in many ways with the well known *area postrema* of the fourth ventricle. It is a small prominence, up to one millimeter in diameter, situated between the columns of the fornix, at the level of the upper border of the foramina of Monro, below the juncture of the two lateral choroid plexuses. It is composed of a peculiar loose neuroglia tissue, containing many coarse capillaries, and covered by low ependyma. In the human brain it contains small nerve cells. The adventitia of the capillaries takes up trypan blue and other vital dyes *intra vitam*. No function can at present be assigned to it. The name intercolumnar tubercle is suggested for this structure.

Klippel. CROSSED PARALYSIS, HISTORICAL. [Bull. de l'Acad. de Méd., Vol. LXXXVII, No. 21, p. 562.]

Klippel traces back through Morgagni, Valsalva, and Boerhaave to Aretæus the practice of venesection on the sound side in case of unilateral apoplexy. Aretæus' exact period is not known but is ascribed to the first century of our era.

André-Thomas. LOCALIZATION IN THE CEREBELLUM. [L'Encéphale, Vol. XVII, No. 5, p. 257.]

This article describes research on dogs and monkeys. Lesions experimentally induced were compared with the motor functioning thereafter, and with the findings on autopsy.

Bakker, S. P. OLIVO-PONTO-CEREBELLAR ATROPHY. [Nederlandsch Tijdschr. voor Geneeskunde, LXVII, February 24, p. 817.]

Bakker reports a case of olivo-ponto-cerebellar atrophy in a man whose family and personal history were good. He was free from any hereditary taint, had a healthy wife and children, but had been a heavy drinker for twenty-five years past. In 1917 his speech became affected; he could say only the shorter words, and sentences were jerked out; his gait was oscillating, and soon he could not walk. He now gave up alcohol. The speech and gait disturbances increased. His incoördination

increased for a year, and he now had to strain for a long time before he could micturate; later he had incontinence of urine. No affection of any internal organs was detected. The diagnosis was cerebellar atrophy. Very good muscular power; no atrophy, palsy, sensory changes, or nystagmus. Slight tremor in outstretched hands; no past-pointing after aural injections. Great alteration of speech, so that polysyllabic words are uttered in a monotonous tone, explosively, nonarticulated, and jerked out all jumbled together, thus a typical cerebellar speech. Unable to stand unsupported, tends to fall backwards, can take only two short steps and then several very tiny ones, and at last his legs run out, as it were, from under his body. Marked cerebellar asynergia. Writing illegible, letters oblique, cannot write in a straight line. A photogram of the finger-to-nose test shows an uncertainty of direction and a slowing of movement, though by the ordinary test no ataxia of the arms is seen. Reflexes normal. Continual incontinence of urine. Psychically he shows slight emotional incontinence. Death in February, 1922, five years after the onset, from bronchopneumonia during an influenza epidemic. Necropsy: Normal spinal cord. In many parts of the cerebral cortex there are greenish pigment deposits in some of the largest pyramidal cells regarded as fatty degeneration. Cerebellum much too small, pons also, and the lower olivary prominences were hardly perceptible. The smallness of the cerebellum is largely due to disappearance of the medullary substance of its hemispheres; in Weigert-Pal preparations the medullary substance is almost wholly white. From the strongly stained spinocerebellar paths which radiate in the vermis one gets the impression that in the vermis a somewhat larger number of fibers are preserved. Otherwise there is no striking difference between the relations in the paleo- and the neo-cerebellum. The corpus dentatum and all the other cerebellar nuclei are normal; so is the zona molecularis; the zona granulosa is rather too small but shows no definite changes. Hardly any of the Purkinje cells are unchanged; only about one-third of these cells is preserved, and even these are greatly altered. Many glia cells are seen in the situation of the Purkinje cells. There is a definite glia cell proliferation. In Hertheimer preparations the remnants of Purkinje cells are laden with products of fatty degeneration. The corpus restiforme and also the corpus juxta-restiforme are very well developed. Both middle peduncles are very atrophic; the brachia conjunctiva are of normal size and have a normal number of fibers. The lower olives show no arching on the surface of the bulb; their convolutions are much too small, and the two olives lie closer together than normal. There are no stained medullated fibers crossing the olives to the middle line; the hilus of the olives is narrowed, and the accessory olives have a more slender structure than normal. The tractus olivocerebellaris is absent. There are hardly any ganglion cells present in the olives; there is great increase of glia, but no infiltration. The pons shows absence of all superficial and deep fibers

and also of Piccolomini's striae. Almost all pons cells are deeply degenerated, and the normal cell groups are unrecognizable, the pons consisting of a spongy mass of glia cells. The nuclei funiculi laterales are strongly degenerated. No cells are visible in the corpus ponto-bulbare. The cells of the arcuate nuclei are gone. The nuclei of the cranial nerves and the nuclei of Goll, Burdach, and Monakow are normal; the same is true of the nucleus ruber, brachia conjunctiva, corpora quadrigemina, corpus striatum, and thalamus. In this case the speech disturbance was the first symptom; the urinary symptoms could hardly have been due to the very slight changes in the cerebrum, and nothing abnormal was found in the spinal cord or urinary tract, so that the question arises whether the cerebellum and its appendages (inferior olives and the pons cells) plays any part in the functions of the bladder. Vesical disturbances have been seen in several cases of olivo-ponto-cerebellar atrophy. In this case alcohol appears to have played the part of an exogenous cause, for we know how injuriously it acts on cerebellar coördination. [Leonard J. Kidd, London, England.]

Holmes, G. CLINICAL SYMPTOMS OF CEREBELLAR DISEASE. [Lancet, No. 5159, p. 111; J. A. M. A.]

Holmes' observations do not lend support to the theory of circumscribed functional representation of different parts of the body in the lateral lobes. He has invariably found that the symptoms produced by a small lesion were never limited to one limb or a segment of a limb; that if any abnormality could be detected in the arm, the leg was affected too, and that there was very frequently in addition some disturbances in the functions of the cranial nerves. In a certain number of cases, however, the one limb seemed to be relatively more affected than the other, the leg being more involved by caudal and mesial lesions, and the arm by the more anterior lesions. It is possible, then, Holmes thinks, that there is a "prevalence of representation" in Rossi's sense, the arm being represented more anteriorly and the leg more posteriorly, but this localization is so indefinite that he would not regard it as a trustworthy guide in the diagnosis of a small lesion, such as cortical tumor. Two clinical facts are brought out by Holmes' observations that tend to invalidate many of the schemes of cortical localization that have been put forward. In the first place, Bolk and many of his followers have claimed that the ocular movements are represented in the lobus anterior or superior vermis, but Holmes has observed nystagmus or other disturbances of the ocular movements in practically all local lesions, no matter what their situation was. In the second place, Bolk placed the representation of the organs of phonation and articulation in the lobus anterior, and Rothmann and Katzenstein and others have described a cortical center for the larynx here, too, but in Holmes' experience speech may be affected by lesions of any portion of either the vermis or lateral lobes, though it is more liable

to be severely disturbed when the vermis is injured. These observations consequently lend no support to a circumscribed or focal representation of different portions of the body in the cortex of the cerebellum, apart from the fact that the vermis is concerned mainly with movements requiring the coöperation of muscles on the two sides of the body, and the lateral lobes mainly with the functions of the homolateral limbs.

6. ENCEPHALITIS.

Hassin, G. B., and Rotman, D. B. PATHOLOGY OF EPIDEMIC ENCEPHALITIS COMPLICATED BY PSYCHOSES. [Am. Arch. of Neur. and Psych., IX, Jan., No. 1. J. A. M. A.]

In the case described by Hassin and Rotman there was a combination of diffuse inflammatory and degenerative phenomena, especially in the basal ganglions and mid-brain. The infiltrations were not so pronounced as in acute cases of epidemic encephalitis; and the proliferative changes were not so marked as in so-called productive encephalitis (caused, for instance, by lead or arsenic). Resembling in the combination of inflammatory and degenerative changes the findings in general paralysis of the insane, this case differs from the latter in the comparatively mild involvement of the cortex. The inflammatory changes in the basal ganglions and mid-brain could, perhaps, explain the nervous manifestations (ocular paralysis, Parkinsonian mask), while the diffuse degenerative phenomena in the cortex were most likely responsible for the patient's mental condition. It is obvious that degenerative lesions are a serious complication of epidemic encephalitis, much more serious than the inflammatory changes. The latter may subside or disappear entirely, leaving no permanent disability, in contrast to a degenerative process, which however mild, may produce more or less troublesome complications of which the most dangerous are mental disturbances.

Goodhart, S. Philip. POSTENCEPHALITIC DEFORMITIES OF MOTION. [Am. Neur. Ass'n, 48th Annual Meeting, May, Wash., D. C.]

Two groups of cases were shown. These were presented on two reels of about 1,000 feet of film each. The first group demonstrated deformities of motion in types of cases of definitely recognized syndromes in familiar types of nervous disease. The second reel illustrated unusual types of deformities of motion observed in the course of or following epidemic encephalitis. The elements of motor disturbance in both groups were pointed out as essentially the same in type. In both series of cases it was shown that the motility disorders involved the kinetic, the static, and the synergic mechanisms and their associated activities.

The first reel included various types of dystonia musculorum deformans. The first three patients of dystonia were all members of the same family, two sisters and a brother. A discussion of the component elements in each case brought out the fact as in the other cases shown,

that the motor features were essentially the same as found in many cases of postencephalitis. Another case of dystonia demonstrated the "dromedary attitude" and the gradual development of the "semilunar foot." In this case the static mechanism was especially involved with segmental fixation, marked deformities resulting. Of a special interest were two cases representing types of dystonia lenticularis or preferably called "striatal syndromes." In the one case the patient was presented on the film showing the peculiarities of movement described by R. Hunt as those found in progressive cerebellar dyssynergia. In fact this case was one of those upon which Hunt based his opinion that this type of case represented a distinct nosological entity. After demonstrating the patient, a moving picture of the autopsy findings showed a fetal **adenoma** of the thyroid gland with hypertrophy of the gland itself, a large hobnail liver of the Laennec type and bilateral cystic degeneration of the putamen of the lenticular nucleus; also degenerative changes in the vestibular nuclei with softening throughout the medulla and cerebellum. In other words these cases apparently belong to the Wilson type of progressive lenticular degeneration associated with hepatic changes. The demonstrator emphasized the importance in the two cases shown of involvement of the thyroid gland as well as the liver and suggested that the thyroid might in some cases be just as important in its relationship to central ganglia function as the liver.

Several cases of athetosis doublé were also demonstrated.

In the second reel a large and interesting group of unusual anomalies of motion were shown in which the etiological factor was encephalitis. The first case was that of a young girl with what appeared to be the typical syndrome of Sydenham's chorea. It was pointed out that there was posing and attitudinizing—sometimes found in true chorea; the anatomical relationship of these symbolic movements to the basal ganglia of the forebrain was pointed out. The next case presented showed a variety of abnormal movements. Combined with athetotic movements of the upper and lower extremities, were tic-like movements of the left sterno-cleido-mastoid muscle with more or less rhythmical oscillations of the head and trunk. The speaker said that this clinical picture was unlike that seen in any other form of disease. The next clinical picture presented multiform movements which had appeared within a few months after acute encephalitis. The movements suggested the striatal type seen in the previous reel and described as dystonia lenticularis. Another case of special interest was presented in which the motor syndrome appeared rather suddenly—about a year after the acute infection. The first pictures taken showed the patient as a young woman about twenty years old. There was at this time no evidence of the Parkinsonian attitude. There was, however, a peculiar movement of the left arm and leg, tic-like in character with synchronous turning of the head sharply to the right; the movement of the extremities was one of adduction and was accom-

panied by an inspiratory movement. The demonstrator described it as probably having origin in the oculo-cephalo-gyric center; it suggested the agonal convulsive reaction frequently observed just previous to final dissolution. A series of pictures of the same patient was shown taken one year later; a most striking change had taken place. The abnormal involuntary movement of the left side had entirely disappeared. The patient's attitude and posture were distinctly Parkinsonian. She had apparently aged—there was every evidence of maturity—she appeared at least ten years older. The latter features of this case were of a special interest as suggesting the influence of the nervous pathology on the physical transformation.

The next film presentation demonstrated the so-called champing or chewing movements occasionally observed after encephalitis. The pterygoids were bilaterally involved. The chewing movements were constant, ceasing only during sleep. Two cases of the familiar Parkinsonian syndrome were shown in middle-aged persons because of the rapidity of onset following acute encephalitis; other unusual features of the two cases were the remarkable change of facial expression and confinement of the early motor manifestations to the face and tongue. A film picture of a case of paralysis agitans with thalamic emotional outbursts was demonstrated. The condition followed a severe attack of acute encephalitis.

A cinematographic reproduction of a young girl with hemiplegia, with dystonic elements, posture and movement, with spinal cord involvement, with cranial nerve symptoms, and Parkinsonian tremor, demonstrated another type of post-encephalitic motor defect. In this same patient there occurred at irregular intervals, and persisting for several hours, a peculiar oculo-encephalo-gyric movement. The paroxysm was strikingly demonstrated by a series of pictures.

A series of moving pictures demonstrating generalized dyssynergic movements, the so-called intention tremor of multiple sclerosis, was shown. The motor manifestations were of encephalitic origin.

Characteristic myoclonic abdominal movement, together with an unusual abductor and external rotation movements of the lower leg and foot (left), were demonstrated in a patient in whom pictures were taken during the acute phase of encephalitis. The movements of the leg were of tic-like character and such as produced by electrical stimulation of nerve or muscle. Another series of pictures of a case taken during the acute stage showed a series of myoclonic movements of the muscles of the quadriceps extensor groups. The movements were like massive fibrillary tremors. The lecturer regarded their origin as due to stimulation by toxins of the anterior horn cells. There was likewise seen massive fibrillary movements, observed in the muscles of the thigh and the glutei. These movements had been preceded by paroxysms of intense pain in the region of the affected muscles. Practically every detail of

the paralysis agitans syndrome was next demonstrated on the screen in the case of a boy of about ten years of age. The patient was in the convalescent stage of encephalitis. A group of pictures of a child of twelve years showed bilateral involvement of the pectorals and the adductors of the thighs and also of the sterno-cleido-mastoid and trapezii muscles. There was constant bilateral, practically symmetrical movements of a myoclonic type. The author briefly discussed the pathology and the analogous elements of the motor expressions in the two large groups of cases. [Author's abstract.]

Caussade and Vigneul. POST-ENCEPHALITIC BRADYKINESIS. [*Presse Médicale*, XXXI, Jan. 10, p. 32.]

The writers report a case of postencephalitic bradykinesia in a woman of twenty-three. She had encephalitis epidemica in 1920, and as she was then pregnant, her condition was labeled chorea gravidarum. She was quite well after her confinement, but soon afterwards gradually appeared the signs of bradykinesia, as described by Cruchet: immobility, extreme slowness of movements, an impassive mask of face, stiffness of limbs, katatonia, impossibility of performing delicate movements, and slowness of speech. She had a diplopia due to a right external rectus palsy, so that the fact of the presence of encephalitis was plain. This postencephalitic Parkinsonian syndrome was especially characterized by the bradykinesia. [Leonard J. Kidd, London, England.]

Staehelin, J. E. PSYCHOPATHOLOGY OF THE CONDITIONS FOLLOWING ENCEPHALITIS EPIDEMICA. [*Zschr. f. d. ges. Neur. u. Psychiat.*, Vol. LXXVII.]

The writer reports the results of encephalitis in eight cases. Two showed pronounced depressive disturbances, one patient committing suicide; two manifested far-reaching effects, organic and schizoid or hysterical. Staehelin considers the disturbances of affect the most important and as independent of somatic conditions. He agrees with Bleuler that the lability of affect ". . . is more massive, elementary, less graduated." Also he notes that passive attention is less affected than active attention.

Mingazzini, G. CLINICAL AND ANATOMICAL-PATHOLOGICAL CONTRIBUTION TO THE STUDY OF ENCEPHALITIS EPIDEMICA. [*Zschr. f. d. ges. Neurol.*, LXIII, 199.]

Mingazzini makes a clinical report from over 100 cases observed by him in Rome. He emphasizes cases which rapidly proved fatal under the form of acute delirium which latter he believes may be regularly a sign of lethargica infection. The sensory symptoms of stimulation as well as the myoclonia are attributed by him to inflammation at the roots, for which he brings histological confirmation. He discusses extensively the anatomical basis of the individual symptoms, agreeing in the main

with other reported opinions. He pays especial attention to the relation of lethargica to poliomyelitis and influenza, and inclines to the conception that these disease processes are not to be distinguished entirely from one another clinically, anatomically, or epidemiologically.

Naville, F. CLINICAL SEQUELAE OF EPIDEMIC ENCEPHALITIS. [Schweizer Arch. f. Neur. u. Psych., XI, No. 1; J. A. M. A.]

Naville started to present the complete picture of what is known to date of the present clinical condition of persons who have had epidemic encephalitis. He decided that the time has not come yet for this. It is still premature to write a general review of the sequelae of this disease. The remote prognosis is very grave, as sudden and serious clinical manifestations may develop after a long period of apparent complete recovery. The future alone will tell the ultimate course of the mental impairment and Parkinsonian states, and whether other tardy complications are to be feared, supplementary to those that have been observed during the eighteen months that have followed the onset of the epidemic.

Klarfeld, B. HISTOPATHOLOGY OF THE CENTRAL NERVOUS SYSTEM IN ENCEPHALITIS EPIDEMICA. [Zschr. f. d. ges. Neur. u. Psychiat., Vol. LXXVII.]

Klarfeld reports with many interesting details the findings in four cases of encephalitis epidemica, chorea-like in form, in which death occurred early. Alteration had taken place in very different regions in the individual cases. All showed inflammatory and purely degenerative changes existing side by side. Klarfeld therefore believes that one should speak not alone of encephalitis. In one case, in fact, the degenerative changes played by far the larger part. He could not determine the principle of localization. The striatum, *e.g.*, was plainly affected only in two cases. He obtained proof neither for nor against the theory of the affection of the basal ganglia nor for other theories. These and many other matters he leaves for further investigation.

Bostreem, A. HYPERKINETIC SYMPTOMS IN EPIDEMIC ENCEPHALITIS. [D. Zschr. f. Nervhkl., LXVIII, LXIX, 64.]

Bostreem outlines nine cases of encephalitis with unusual symptoms or combinations of symptoms. Connection of the encephalitis with grippe was not evident in all cases, although clinically such a connection seemed likely even where not clearly established. There was nothing in the anatomical findings to contradict it. Reports of the individual cases were as follows: 1 and 2, epileptiform convulsions, polyneuritic symptoms; 3, convulsions indicated, polyneuritis, somnolence, nystagmus; 4, somnolence disturbances of eye muscles, polyneuritis, delirium; 5, delirium and myoclonia; 6, myoclonia with chorea; 7, chorea, transitory tetanus- and tetany-like spasms, compulsive movements similar to torsion spasm;

8 and 9, disturbance of eye muscles, cerebellar and myelitic symptoms, the complete picture similar to that of multiple sclerosis. Cases 5, 6, 7, hyperkinetic cases, proving fatal, were submitted to autopsy. The histological findings were similar to those found before in encephalitis. The areas chiefly affected were those of the rhomboid fossa, of the brachium, the central ganglia, and especially the lenticular nucleus. The number of areas involved, together with the proximity of inflammatory and toxic processes, was believed to be the cause of the combination of a variety of symptoms.

Sauer, W. PAIN WITH ENCEPHALITIS EPIDEMICA. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXIX.]

The pains found in certain patients with encephalitis are pains of a state of rest disappearing with movement. The author believes they must have some broad relation to the pallidum. He notes similar disturbances in paralysis agitans.

Legrand and Duthoit. A POST-ENCEPHALITIC PARKINSONIAN AND ADIPOSE-GENITAL SYNDROME. [Presse Médicale, January 10, XXXI, p. 43.]

The writers report to the Medico-Chirurgical Meeting of the Lille Hospitals the case of a man who showed, four years after a lethargic encephalitis, a Parkinsonian syndrome together with an adiposo-genital syndrome and glycosuria; he had no visual symptoms, his visual fields were normal, and radioscopy revealed a normal sella turcica. The biological tests gave no evidence of any possible disturbance of the pituitary secretion. The writers see in this fact a clinical confirmation of the theory of Camus and Roussy, who regard the symptoms of the adiposo-genital syndrome, commonly attributed to the pituitary, as really of infundibular and tuber cinereum origin. [Leonard J. Kidd, London, England.]

Meggendorfer, F. ENCEPHALITIS LETHARGICA, SLEEP AND EFFECT OF SCOPOLAMIN. [D. Zschr. f. Nervhkl., LXVIII, LXIX, 159.]

The writer concludes from several facts that the point of action of scopolamin is chiefly found in the "central ganglia." He accepts the grounds of Trömner and Mauthner that the region of the third ventricle and the aqueduct is the "sleep center." It is here also that the anatomic changes in lethargica are found to be concentrated. Further normal sleep, encephalitis lethargica, and the effect of scopolamin have many analogous points. More important still, the author gives three examples of the effect of scopolamin in checking motor activity and inducing sleep in the case of post-lethargic Parkinsonian symptoms with distressing insomnia.

Piticariu, I. TREATMENT OF SEQUELS OF EPIDEMIC ENCEPHALITIS. [Wien. k. Woch., Vol. XXXV, No. 18, p. 441; J. A. M. A.]

In three cases of persisting clonic spasms and in one case of Parkinsonism continuing long after subsidence of the acute encephalitis, Piticariu injected intravenously the patients' own lumbar puncture fluid. No benefit was derived from simple lumbar puncture, without subsequent intravenous injections. Through lumbar puncture he aspirated with a record syringe 10 c.c. of spinal fluid, which he immediately injected into the ulnar vein of the same patient. The injections were given at intervals of from five to seven days. In mild cases four injections sufficed; in the severer cases as many as seven injections were required. Soon after the first injection, the symptoms began to decrease, and later disappeared entirely or nearly so. He theorizes that the cerebrospinal fluid may contain antibodies during convalescence from the epidemic encephalitis.

Carnot, P., and Blamontier. TREATMENT OF EPIDEMIC ENCEPHALITIS. [Paris Méd., Vol. 56, February 24.]

P. Carnot and Blamontier record two cases of severe epidemic encephalitis, in a girl aged nineteen and a boy aged sixteen, respectively, treated by intravenous injections of large doses of sodium salicylate. In the first case, in which 4.5 grams of the drug were given daily for six days, there was almost complete cure for about a week, with cessation of the choreic movements and return of intelligence. A relapse, however, took place during which intravenous injections were impossible, owing to obliteration of the veins, and proved fatal, like three other cases of untreated acute choreiform encephalitis observed by the authors. In the second case, in which the disease was of the lethargic type, the symptoms rapidly subsided after injection of 50 grams of sodium salicylate in the course of a week, and recovery took place.

Souques, A. AUTO-INJECTIONS IN POST-ENCEPHALITIC SYNDROMES. [Bull. d. l. Soc. Méd. d. Hôp., December 22, XLVI, No. 37.]

This observer reports negative results with the treatment of Parkinsonian post-encephalitic syndromes with intravenous autoinjections of cerebrospinal fluid as recommended by Piticariu.

Szyszká, W. ATROPIN IN TREATMENT OF ENCEPHALITIC PARKINSONIAN SYNDROMES. [Munch. med. Woch., January 12, LXX, No. 2.]

Post-encephalitic Parkinsonian syndromes often respond well to atropin, even though temporarily. Four to six pills daily of 0.0005 gm. atropin sulphate for three to six days is the dosage used. The treatment is then interrupted for two or three days. In some of the patients the dose had to be gradually increased to 0.004 gm., but without causing untoward effects. One patient who had required over five minutes to copy sentences was able to do the copying in two minutes and twenty seconds

after six days of atropin. Similar effects were observed in the time required in dressing. These effects upon bradykinesias still require explanation.

Henner, K. TREATMENT OF ENCEPHALITIS PARKINSONISM. [Cas. Lek. Ces., December 23, LXI, No. 51; J. A. M. A.]

Henner reports the results of this treatment in fifty-two cases, with 1,300 injections. Nearly 2,000 injections were given at the clinic without such mishaps as have been described by French authors. The solution used was sodium cacodylate 0.50 gm. in 2 c.c. of twice distilled water. The solution must not be older than two days. The intravenous injections were given three times weekly, starting with 1 c.c. and increasing to 4 c.c. At the end of one course the amount was decreased to 1 c.c. The whole course required a total of from 30 to 65 gm. of sodium cacodylate. After three weeks the treatment was repeated. Four such courses were given. Nicotin, alcohol, caffein are harmful. Physical treatment was used if the disease did not show signs of activity. The urine should be watched for albumin and sugar. After the injection no heavy meals are allowed. Of the fifty-two patients, forty-nine were influenced favorably.

Geiger, J. C., Dickson, E. C., and Meyer, K. F. THE EPIDEMIOLOGY OF BOTULISM. [*Pub. Health Bull.*, CXXVII; Med. Sc.]

A commission formed in California, consisting of Geiger, epidemiologist of the United States Public Health Service, Dickson, of the Stanford University Medical School, and Meyer, of the California State Board of Health, have made a study of all the outbreaks of botulism in the United States and Canada concerning which records are available. Ninety-one reports dealing with single or group outbreaks of botulism were collected, representing a total of 345 persons with 313 deaths, or a mortality of 61.7 per cent. In only 30 instances, or 32.9 per cent, was the clinical or post-mortem diagnosis confirmed by bacteriological or toxicological tests. In the United States preserved plant products such as home-canned string beans, corn, asparagus, spinach, beetroot, apricots, and pears, and commercially pickled ripe olives, commercially packed spinach, string beans, beetroot, and corn, were found to be the most frequent causes of outbreaks of botulism, while in Germany pork and fish products are the commonest causes. The causative food in 63 outbreaks studied by the commission consisted of home or commercially canned plant products, while animal products were responsible for 19 single or group intoxications. There was no evidence of any special incidence at any age period. The intoxication rate was very high. As a rule all who ate the poisonous food became ill. The number of fatal cases varied greatly in different outbreaks. The case mortality for 129 cases in California was 61.3 per cent. In children the mortality rate was higher than in adults. The high mortality of botulism is in marked contrast with other forms of food

poisoning, in which both in England (Savage) and in Germany (Schneidemühl) the mortality is only about 1.5 per cent. More than half the botulism outbreaks of California occurred during the autumn and winter months, in contrast with bacterial food infections which are usually prevalent during the hotter months. The evidence did not support the current idea that the food must always be perceptibly spoiled to be toxic, as in several instances no naked-eye changes or unpleasant odor were detected.

Whiteman, R. T., and Wilkinson, E. A. OUTBREAK OF BOTULISM AT CAMBRIDGE, IDAHO. [Jl. Am. M. Asso., LXXVIII, 1278; Med. Sc.]

Whiteman and Wilkinson report an outbreak of botulism at Cambridge, Idaho. Of nine persons who took part in a birthday dinner containing home-canned greens (beet and turnip tops) and home-canned tomatoes, six died, two were severely ill, and only one had no symptoms. No specimen of the suspected food or container could be obtained for examination, but the survivors stated that they refused the canned greens because they had a musty smell and an unpleasant taste.

Cutter, J. B. DEATH FROM FOOD POISONING DUE TO *BACILLUS BOTULINUS*. [Jl. Am. M. Asso., LXXIX, 825; Med. Sc.]

Cutter, of San Francisco, records two fatal cases in men from failure of the respiration after eating tomato-onion-chili sauce. Its taste was not much different from that eaten previously. The sauce provided an acid medium, the first instance on record in which *B. botulinus* has developed under these conditions.

Beall, C. G. REPORT OF AN OUTBREAK OF BOTULISM. [Jl. Am. M. Asso., LXXIX, 38; Med. Sc.]

Beall, of Fort Wayne, Indiana, describes an outbreak of nine cases with four recoveries and five deaths following a meal of canned salmon and canned spinach. *B. botulinus* and Type A botulinus toxin were isolated from the spinach. One of the cans looked perfectly normal and the other showed a very slight bulging at one end. None of the partakers of the spinach noticed anything peculiar about the taste. Type A botulinus serum and a polyvalent serum, Types A and B, were used in seven cases. All the survivors developed varying degrees of urticaria from seven to ten days after the serum, which was given subcutaneously.

Monro, T. K., and Knox, W. W. N. REMARKS ON BOTULISM AS SEEN IN SCOTLAND IN 1922. [Brit. M. Jl., 1923, I, 279-81; Med. Sc.]

Monro and Knox describe the outbreak of botulism at Loch Maree Hotel, Scotland, in August, 1922, which was remarkable as being the first epidemic of botulism known to have occurred in Great Britain; eight cases occurred and were all fatal. All had partaken of certain sandwiches made of potted wild duck. The incubation period ranged from

14 to 43 hours and the duration of the disease from 15 hours to 6¼ days. The symptoms were typical. *B. botulinus* and its toxin were found in the remains of one of the pots of wild duck. Morphia was the only remedy that gave any benefit, and that was only temporary. [J. D. Rolleston.]

Morel, C., et De St. Martin, R. AN EPIDEMIC OF BOTULISM. [Presse méd., XXX, 829-31; Med. Sc.]

Morel and De St. Martin, of Toulouse, report an outbreak of botulism, which is of special interest, as epidemics of botulism are rare in France. Of eleven persons who ate some tinned American salmon seven developed the disease and two had a severe attack, but there were no deaths. The symptoms were characteristic, and *B. botulinus* was isolated from the tinned food. The writers emphasize the importance of the ocular signs which De St. Martin had previously described (see Medical Science, 1921, III, 413). Four presented complete paralysis of accommodation, three amblyopia, narrowing of the visual field, and neuroretinal congestion, two mydriasis, and one slight unilateral ptosis. Two patients complained of dryness of the throat only, and two of gastro-intestinal disturbance without any ocular symptoms. The mild character of the epidemic may have been due to the small quantity of toxin ingested or to the low virulence of the bacillus which was demonstrated experimentally.

Worms, G., et Gaud. OESOPHAGEAL PARALYSIS IN BOTULISM. [Rev. de lar., d'otol. et de rhinol., XLIV, 387; Med. Sc.]

Worms and Gaud, of Paris, record a case of botulism with oesophageal paralysis, which has not hitherto been described as a complication of this disease. Although dysphagia is one of the regular symptoms of the initial stage, it is usually explained by dryness of the throat and it is only Vernieuwe (see Medical Science, 1921, III, 413) who has attributed it to palatal paralysis. In the present case the diagnosis of paralysis of the oesophagus was made by X-ray examination and oesophagoscopy. Whereas in the normal condition the bismuth meal falls directly from the mouth into the cardiac end of the stomach, in paresis it spreads itself over the walls of the oesophagus, where it stays a considerable time. In the present case ten minutes after two teaspoonfuls of bismuth had been taken the meal was still present in the oesophagus, and several draughts of water were needed to wash it down. Passage of the oesophagoscope showed that the walls of the tube were flaccid. The paralysis lasted for two months and then complete recovery took place. In spite of the long duration of the paresis the oesophagus showed no tendency to dilatation. The paralysis was the result of a cerebral lesion consisting in a poliomeso-encephalitis limited to the group of cells from which the motor fibers of the digestive tract arise.

Seidelmann, W. A VERY SEVERE CASE OF BOTULISM. [Med. Klin., XIX, 113-14; Med. Sc.]

Seidelmann, of Breslau, reports a remarkably severe case of botulism, which ended in recovery, in a man aged thirty-nine. In addition to paralysis of the oculomotor nucleus shown by ptosis, cycloplegia, dilatation and fixity of the pupils, and of the abducens nucleus, the glossopharyngeal nucleus was also involved, and the dysphagia caused thereby was for some time a very distressing symptom. The phrenic nerve was also affected, as was shown by transient disturbance of respiration. Incontinence of urine and absence of knee-jerks indicated involvement of the spinal cord, and have hitherto only rarely been seen in botulism. In addition to the ordinary general and symptomatic treatment, strychnine was given in doses of 1-5 mgm. subcutaneously every day for three weeks. Botulism antitoxin was not used, as it could not be obtained until spontaneous improvement had occurred. [J. D. Rolleston.]

Schoenholz, P., and Meyer, K. F. SEROLOGIC CLASSIFICATION OF B. BOTULINUS. II. AGGLUTINATION. [Jl. Immunology, XI, January; J. A. M. A.]

The 104 strains of *B. botulinus* types A and B included in the investigation reported on by Schoenholz and Meyer were isolated from human and animal outbreaks, from infected home and commercially canned food products, and from soil, plants, etc., collected throughout the United States and in Canada. The data at hand indicate that a culture of *B. botulinus* is made up of variants which exist side by side. Some may predominate at one time, some at another, and in the course of time, through continued picking, certain pure lines may be produced, which if stable in character may breed true. No strain has been encountered which was permanently inagglutinable and then in the course of time became agglutinable, although some cultures have been studied which were partially or poorly flocculated but finally produced only agglutinable antigens. In the light of these facts, it is quite evident that a serologic classification of *B. botulinus* or any other anaerobe should be based on the study of a large number of strains, tested and retested over a fairly long period of observation.

Cowdry and Nicholson. A HISTOLOGICAL STUDY OF THE CENTRAL NERVOUS SYSTEM IN EXPERIMENTAL BOTULINUS POISONING. [Jl. Exper. Med., Vol. XXXIX, p. 827.]

Cowdry and Nicholson say that the results of their observations indicate that, except for a slight degree of vascular engorgement, all the lesions which they have noted in the brains of mice, guinea pigs, and rabbits suffering from botulinus poisoning are readily susceptible of some explanation other than that they are produced by the direct action of the toxin upon the central nervous system. This absence of microscopical

evidence of a central action of the toxin is not, of course, conclusive proof that the cells in the brain are not primarily involved, because it is quite conceivable that, owing to the delicacy of the nervous mechanism, the toxin might well act centrally without leaving any traces microscopically visible. But the observations do not tend to show that, upon the histological side, there is no evidence inconsistent with the results of physiological experiments indicating that the site of action of the toxin is upon peripheral nerve terminals.

Collier, James, and Greenfield, J. G. THE ENCEPHALITIS PERIAXIALIS OF SCHILDER. A CLINICAL AND PATHOLOGICAL STUDY WITH AN ACCOUNT OF TWO CASES, ONE OF WHICH WAS DIAGNOSED DURING LIFE. [Brain, XLVII, 489.]

The authors discuss the symptomatology of the twenty-four cases of this disease which have been confirmed at autopsy. In the sixteen cases in which the disease began in the occipital poles, the clinical picture has corresponded so closely to that observed in their cases that, in the author's opinion, a diagnosis could have been made during life. They describe this picture as follows: "A malady usually occurring in children and young subjects with no tangible causal factors or antecedents. The onset is a few days, the course progresses with some remissions to a fatal issue, the duration from a few months to three years. The chief early sign is cerebral blindness, which becomes complete, to which is added mental reduction and increasing spastic paralysis. Unsteadiness from parietal involvement and deafness from temporal involvement may be conspicuous. The amentia increases and passes into coma which terminates the illness." In the other eight cases, in which the pathological process either began in the frontal lobes or was unilateral, it would probably have been impossible to make a diagnosis.

The pathological picture is characteristic. It is that of a massive affection of the white matter of the cerebral hemispheres, usually bilateral and symmetrical. The subcortical layer of myelin is spared, even in the most affected regions of the brain, but the myelinated sheaths of the centrum semiovale are destroyed. The axis cylinders remain at first intact, but these eventually perish. The neuroglial reaction varies in degree, but is always characterized (except in very rapidly fatal cases) by the appearance of large rounded cells with multiple subcapsular nuclei, and no cell processes or fatty inclusions. There is comparatively little lymphocytic exudation in most cases. The cause of the disease is unknown. [Author's abstract.]

Urechia, C. I., Mihalescu, S., and Elekes, N. DIFFUSE PERIAXIAL ENCEPHALITIS, TYPE SCHILDER. [L'Encéphale, XIX, p. 617, 10 figs.]

The writers add a case of Schilder's diffuse periaxial encephalitis to the few that have been recorded. The disease has a very varied sympto-

matology and is very difficult to diagnose. Clinically it may appear as a general paralysis, a disseminated sclerosis, tumors, encephalomyelitis, or as Heubner's diffuse sclerosis. Generally it gives both focal neurological and psychological symptoms. The former are very varied, for any part of the neuraxis may be attacked. Commonly there are visual or speech symptoms, cranial nerve palsies, and paraplegias; and there may be somnolence, attacks of yawning or of spasmodic laughter or hiccough, meningitic cries, intention tremors, scanning speech, affections of the reflexes, fever, sensory symptoms, headaches, or ataxia. Among the psychological symptoms are obnubilation, apathy, mental confusion, dementia, and the paralytic syndrome. In most cases we have both neurological and psychological symptoms. The disease is usually progressive, and ends fatally in from four months to over four years; temporary remissions occur, but rarely. Macroscopically are found gray or yellowish plaques, sometimes of spongy aspect, present most often in the white matter and well delimited from the rest of the nervous tissue. The deeper layers of the cortex cerebri are rarely affected, yet the whole of it may be. The parts involved include the cerebral hemispheres, cerebellum, bulb, pons, spinal cord, basal nuclei, tuber cinereum, substantia grisea of Soemmering, dentate nuclei, corpus callosum, and optic chiasma. In one case there was bronzing of skin and atrophy of the adrenals. Microscopically the plaques show a disappearance of nearly all the myeline; the cylindraxons are relatively well preserved, yet they show some changes. The neuroglia proliferates enormously, and appears as a thick felting such as is seen in gliomata and in tuberosc sclerosis (glioblastosis). In these sclerotic foci one finds enormous quantities of areolar cells filled with fat. The fats found in the plaques are different, and they are seen not only in the areolar cells but in the vessels in large quantities, and to a certain extent in the glial cells. The adventitia of the vessels shows almost always cellular infiltrations with lymphocytes, polyblasts, and plasma cells. The infiltrations vary in their locality. The transition from the plaques to the neighboring tissues is rather abrupt. In one case the fat was greatly reduced in the plaques, but there was present an immense quantity of Alzheimer's basophil-metachromatic debris. The region between the plaques may show little change, or sometimes a gliosis, atypical, so that a connection between these forms and gliomata has been suggested. These slight anatomico-pathological differences have led authors to divide the affection into three anatomical groups: (1) the inflammatory type, (2) the degenerative, and (3) the blastomatous. The concomitance of changes in the adrenals and diffuse sclerosis in the case of Simmerling and Kreutzfeld raises the question of the anatomico-pathological relation between the adrenals and the brain, for Jakob has found in Addison's disease quite atypical gliocytes.

The writers' case was a man of thirty-seven, of good health and antecedents, who six months previously was suddenly seized with pain in

head and spine. He then became depressed, and clinically seemed to be a case of hypochondriac paranoia. His nervous symptoms were but slight, viz., pupils unequal and irregular with sluggish light reaction; ankle-jerks diminished; abdominal reflexes lost, except right upper; gait slightly ataxic, tendency to lateropulsion; in walking his attitude is parkinsonian; scoliosis; Pandy and Nonne-Apelt reactions of spinal fluid positive; visual fields reduced, especially left; vision one-third; some bronzing of skin. The microscopical appearances in the case corresponded to the inflammatory type of the diffuse periaxial encephalitis of Schilder. From a histological point of view approximated disseminated sclerosis rather than glioblastosis or glioma. As to the pathogeny of the disease, nothing certain can be stated. Probably it is due to an infective agent which is transmitted by the blood-vascular route and has a rather marked affinity for the white matter. [Leonard J. Kidd.]

Goodpasture, E. W. PATHWAYS OF INFECTION OF CENTRAL NERVOUS SYSTEM IN HERPETIC ENCEPHALITIS OF RABBITS CONTRACTED BY CONTACT; COMPARATIVE COMMENT ON MEDULLARY LESIONS IN CASE OF HUMAN POLIOMYELITIS. [Am. Jl. Path., Vol. 2, January; J. A. M. A.]

Of ten experiments in which normal rabbits were placed in contact with rabbits infected in the eye with the virus of herpes simplex, seven contracted a herpetic encephalitis, and three of these died of the disease, four were killed a short time after the first appearance of symptoms. One rabbit which showed a slight elevation of temperature on the fourth day after exposure was killed two days later and the brain revealed no evidence of herpetic infection. Two rabbits after exposure for several days showed no symptoms of herpetic infection. Six weeks later one of these rabbits was inoculated on the eye with herpetic virus and died nine days later with herpetic encephalitis, thus showing no evidence of immunity to the virus. In the case of five rabbits whose pons and medulla were examined, it was clearly shown that the virus entered the brain twice through the sensory division of the fifth cranial nerves, once through the ninth cranial nerves, and twice through both these nerves. In two cases in addition to other lesions there was a herpetic inflammation involving the accessory motor nuclei at the lateral angles of the floor of the fourth ventricles. Virus apparently entered by way of the motor nerve through the fibers which have their origin in these nuclei. An opportunity was afforded to study histologically the brain of a sporadic case of poliencephalomyelitis in which lesions were present in the medulla that were strikingly analogous to those present in a similar situation in rabbits which have acquired herpetic encephalitis through an invasion of the brain by way of the glossopharyngeal nerve. Sufficient material was not obtained from this case to make a complete study of the central termina-

tions of peripheral nerves. It is suggested that the virus of poliomyelitis in human infections may enter the brain through peripheral nerves.

Sterling, W. POST-ENCEPHALITIC PARKINSONISM WITH "PALILALIA." [Revue Neurologique, An. 31, T. 1, No. 2, p. 205.]

The first patient was twenty-seven years old. The Parkinsonism began about one and one-half years after the encephalitis. The most unusual symptom was the palilalia, which is defined as the multiple repetition of words or phrases in replies to questions or in spontaneous speech. There would be from four to sixteen repetitions, usually becoming a faster rhythm and less distinct toward the end. A second patient with the same symptoms was sixty-four years old. In this case, however, the palilalia was only occasional. [Camp, Ann Arbor.]

Benard, R., Marchal, and Bureau, Y. SODIUM SALICYLATE IN EPIDEMIC ENCEPHALITIS. [Bull. et Mém. Soc. Méd. Hôp. de Paris, Jan. 16, Vol. 49.]

A case of epidemic encephalitis is here recorded. The patient was twenty-nine years of age. The syndromy assumed the form of severe febrile chorea with ptosis, paralysis of convergence, sialorrhea, tics of respiration and expectoration, and albumin and excess of sugar in the cerebrospinal fluid. No effect being obtained by intravenous administration of urotropine, intravenous injections of sodium salicylate in 10 per cent solution of glucose were employed. After the first injection of 0.50 gram of salicylate the temperature fell from 100.4° to 98.6° F. without any other change being noted. Subsequently a daily injection of 1 c.cm. was given without any effect until the fifth day, when improvement set in and rapid recovery took place.

Cookson, H. A. SUGAR CONTENT OF CEREBROSPINAL FLUID IN LETHARGIC ENCEPHALITIS. [Brit. Med. J., Jan. 24, 1925.]

Practically all of the fifteen cases of epidemic encephalitis seen by this author showed blood sugar to be definitely increased above the normal. This finding may be of service in diagnosis, especially of tuberculous meningitis and in other types of meningitis, where the sugar content is reduced. An eye sign described by Throp was also very prevalent in his series of cases.

Matsui, Kiyoshige. EPIDEMIC ENCEPHALITIS IN TOKYO. [Medical News, November, 1924.]

The author observed four cases. He was able to clearly differentiate these cases from epidemic cerebrospinal meningitis. The differences from epidemic encephalitis, as it is known since Economo, if any, were that his four cases had no prodrome, but onset of fever occurred all of a sudden and his cases lacked ophthalmic symptoms. The findings of the

cerebrospinal fluid and general clinical features agreed with those of epidemic encephalitis. Amelioration took place within some ten days and at the same time with the fall of fever lethargia disappeared and recovery soon ensued.

Krabbe, K. H. THE ARGYLL-ROBERTSON SIGN IN CHRONIC EPIDEMIC ENCEPHALITIS. [*Revue Neurologique*, An. 32, T. 1, No. 1, p. 45.]

Babinski, Grasset, and others have regarded the Argyll-Robertson sign as pathognomonic of antecedent or present syphilis, although it has been reported as present in cases of trauma to the peduncle and rarely in cases of epidemic encephalitis. The author reports three cases with Argyll-Robertson pupils. The first one had a partial bilateral third nerve palsy; the second was a case with the Parkinson syndrome; the third was a traveling salesman who suffered with headache. Syphilis is ruled out by the negative Bordet-Wassermann test. [Camp, Ann Arbor.]

III. SYMBOLIC NEUROLOGY.

1. PSYCHONEUROSES; PSYCHOLOGY; PSYCHOANALYSIS:

Kerns, Harry N. "CADET PROBLEMS." [*A. J. of Psychiatry*, Jan., Vol. III, No. 3.]

Mental hygiene programs in educational institutions constitute an important recent extension of psychiatric work. Kerns has been working for several years at West Point. The cases of mental disturbance are second in number of all those which the physician sees, including minor injuries in athletics. Frank mental disease is uncommon; there having been four cases of dementia precox in the last four years. Most of the cases are problems of behavior, next in number are the psychoneuroses and mild depressions. There have been but three cases of conversion hysteria in four years. The cadets are under a severe regime of discipline, and work on a competitive basis in both the academic and military division of their training. They are exceptionally honorable and truthful in their dealings with the physician. Because the eyes of their respective communities are upon them the strain of examination time is unusually severe, and most of the "breakdowns" are at this time. The problem most often brought to the physician is that of autoeroticism, which in most cases is easily handled. The cases demand emergency treatment, and extended psychotherapy is impossible.

Williams, Leonard. CONSTITUENTS OF THE UNCONSCIOUS. [*Br. J. Psych., Med. Sec.*, Vol. II, p. 4.]

The brain is not the exclusive seat of mind. Rudimentary mind goes back to the ganglion cells of the vegetative nervous system of invertebrates which have their homologues in man. The brain is a mere mushroom growth, phyletically considered, in the elaboration of this long

chain. The endocrines are a part of the older chemical links in this elaboration. The unconscious here is the unconscious of Samuel Butler, of Spencer, of Semon in a purely biological setting.

Pratt, George K. "EDUCATION AND INTERPRETATION. TWO ESSENTIALS IN A MENTAL HYGIENE PROGRAM." [A. J. of Psychiatry, Vol. III, No. 3.]

The two major mental hygiene activities are (1) clinical, (2) educational. It is as necessary to create or awaken a demand on the part of the public for the clinical service, as it is for a manufacturer to do the same for the new products which he introduces to the public. The commodity of mental hygiene must be put before the public in simple terms and illustrations which will readily interest the public. The educational program when of the best sort is a long, carefully planned campaign, which will include these features, (1) lectures, (2) instruction courses, (3) literature, (4) exhibits, (5) legislation.

Chapman, Ross. "THE CONTROL OF SLEEPLESSNESS." [Amer. J. of Psychiatry, Vol. III, No. 3.]

The treatment of sleeplessness is the treatment or removal of the condition underlying it. Careful physical and mental examinations, and investigation of environmental factors should be made. Being an individual problem always, in cases of severe mental disturbance and because of the lack of time for individual attention in hospitals, an efficient regime of occupational and hydrotherapeutic treatment is desirable. The use of drugs except in exceptional instances is undesirable. In psychoneuroses, psychoanalysis is the best treatment.

Glueck, Bernard. THE CONCEPT "NERVOUS CHILD." [A. J. of Psychiatry, Vol. III, No. 3.]

The constitutionally nervous child is characterized from birth by hypersensitiveness to sensory stimuli. As it grows older "heightened fatigability" becomes apparent. A misjudgment of intelligence often results from a mistaken interpretation of the hypersensitiveness and hyper-awareness of the child with consequent ill effects. Mental and physical symptoms which seemingly result from conscious deliberation, are more easily eradicated than those whose basis lies in the less conscious instinctive emotional life of the individual. As well as failing to develop healthy methods of adaptation the nervous child lacks sufficient capacity for adaptation to its environment. The child-parent relationship of dependence is usually maintained beyond its normal period. Experiences, events and incidents, which the child thinks must be left secret complicate the child's problem. The evil effects of such burdens may be prevented by a comradeship and feeling of confidence between parents and child. The school life of the nervous child both because of the child's difficulty

and the teacher's lack of understanding, is productive of additional neurotic manifestations. Much more difficult to handle are those cases in which the roots of the neurotic reaction are in the intimate infantile experiences of the child. It is necessary to give greater consideration to the environmental factors in the affective life of an individual than has been the custom in the past.

Hermann, Imre. MARGINAL PREFERENCES AS A PRIMARY PROCESS. [Int. Zeit. f. Psa., Vol. IX, No. 2.]

Hermann found by experiment that in young children there is a tendency to choose from a series of similar objects placed before them, that which is at one of the extremities of the row. At about the age of six this tendency is replaced by an inclination to choose an object from the middle of the series (*Mittelwahltendenz*). The manner of choice in earlier years was found to be connected with a certain difficulty of regarding the series of objects as a single entity, as a whole or complex. To explain the more primitive behavior Hermann assumes an "immediate stimulus" whereby the motions in picking out the object are prompted by the stimulus without the intervention of a central "productive" process, and without the construction of the so-called higher object forms. The experiment also showed the observer that in the earlier years the active hand helps the choice, the right hand seeking the right marginal place and the left the left one. In more advanced age this "organ readiness" is no longer effective. It may be assumed, Hermann says, that in primitive behavior the hand is not merely directed but that it influences the characteristic decision in the act.

The facts discovered in children were corroborated by G. Révész in interesting experiments with animals. Having established these facts, Hermann reviews the field of psychology in order to determine whether this phenomenon is general and he believes he has discovered a manner of functioning which is universal for primitive mentality and one which throws much light on the primitive mind. The reflex arc may be imagined with the members: sensation, association, concept, innervation, reaction. Then in the primitive processes is found a more immediate reaction upon the sensation, the two peripheral processes being the ones which are prominent. It is thus possible to distinguish two positions in the psychic processes, the marginal which is emphasized in the marginal preferences and is closely connected with the organ, and the inner position which is centrally localized. The former is characteristic of more primitive thinking. A development of this sort is not only discernible in the individual, but in the progress of science as well. If we think of dynamic processes as inner positions and static ideas as marginal we can easily understand why ideas of force were later adopted to replace static concepts. Especially is this obvious in psychology, where the soul was long referred to as a thing. The whole trend in science, says

Hermann, is to proceed from the consideration of mere unities (complexes, Gestaltqualitäten), characteristic of the marginal choice to a preference for inner content in the form of an active or efficient force. By the theory of marginal choice we are led to assume two forms of psychic unity, one more primitive and one which belongs to later development. Every form, every image, every sign approaches the primitive form as long as it is regarded as an agglomerate of sense impressions and it becomes a unity belonging to the higher development as soon as the unity is regarded in a dynamic aspect as efficient. Applying this principle to the concept of the ego, it becomes apparent that the pure external world as opposed to a pure ego are extreme marginal positions, which developed thought abandons and replaces by the concept of the so-called 'deep thought,' where the realities of the external world and the deepest strivings of the ego meet.

It had long been suspected that the peripheral movements of emotional expression (Wundt, Darwin) were developed from some more central unifying process, but until Freud no one had the courage to approach the sexual content as significant. In connection with the marginal preference in physiological sense the choice of especially "ticklish" places on the surface, head, eyes, etc., as the seat of emotional expression is noted. Proceeding still further in the same direction Hermann ventures to suggest a biological application of the principle (at the same time acknowledging that it may seem fantastic), positing a marginal preference in the projection of stimulation to the surfaces of the body (Head's zones) and in the antagonistic innervation (*e.g.*, of the vessels of the heart). Mendel's laws (as they imply the "all or nothing," the "either or," that is the principle of absolute presence or absence) are cited as examples of marginal preference. Examples illustrative of marginal preference in neurotics are given, among them the emotional extremes in which nervous persons live. Other instances are phenomena in aphasia and perseverations. Defining the pleasure principle as that element whose function it is to reduce stimulus to a minimum or to keep the stimulation constant, Hermann seeks to determine the relation of marginal preferences to this principle. It is not the office of the pleasure principle to choose among several objects the one which promises the greatest possible pleasure, nor does the marginal preference always follow the easiest path, so that the two principles do not coincide. It may be said that the marginal preference generally, in a more or less abstract way, is related to the economic principle and that the marginal preference is usually, though not always, made in accordance with the line of least resistance or in the easiest way, so that the pleasure principle and that of marginal preference are closely connected; they do not, however, stand in the relation of the general to the particular and it is probable that they are wholly different provinces and only secondarily associated. It is also possible that marginal preference is held to in primitive behavior

because it usually works in accordance with the pleasure principle and that therefore marginal preference is one factor contributing to the ascendancy of the pleasure principle in primitive mentality.

To illustrate the operation of this principle in a biogenetic sense examples are given where in the individual sphere, in the form of optical illusions, more primitive forms of vision have persisted which show marginal preference. In this sense stroboscopic vision is analyzed. In regard to thought and motility from this point of view, Hermann says that thought and action are connected and are not independent parallels; that they have a single common principle—their purpose. In accordance with the theory of marginal preference as connected with biogenetic development the significant latent content of thought would at primary levels be immediately connected with actions as peripheral processes and later the process which we regard as thought would come into play. For this reason the affects—that is the more primitive formations—would be constantly connected with motor acts (or their reminiscences) and even pure thought would never be entirely free from accessory motor phenomena—though this, on account of the evanescence might escape us.

It is noted that in artists the development of thought has not proceeded in the ordinary manner. Certain peripheral impressions proceed to adaptation to reality without the intervention of the central thought processes and the peripheral processes thus preserve an ascendancy. This process may be clearly followed in children's drawings where the thought work seems to be carried on in direct connection with the motility.

Freud, S. NOTES ON THE THEORY AND PRACTICE OF DREAM INTERPRETATION. [Int. Zeit. f. Ps., Vol. IX, No. 1.]

Freud here adds a few remarks to his text on the interpretation of dreams: (1) In the interpretation of dreams any one of several technical procedures may be adopted: the patient may be led to give his associations to elements in the dream as they occur in chronological sequence; or he may be required to give what occurs to him in regard to particularly striking features; or questions may be asked concerning the events of the previous day, which come to mind in connection with the dream; or, finally, if the dreamer knows something about the technique of analysis, all guidance may be dispensed with and the dreamer may be permitted to choose for himself the associations with which he wishes to begin. Freud does not see that any one of these methods has any great advantages over the others.

(2) He considers the degree of resistance a factor of great importance. One noteworthy feature of very great resistance is that the associations begin to broaden out laterally, instead of becoming deeper. If the resistance is very great it is almost impossible to make definite interpretations and the most that can be done is to suggest some symbolic

interpretation which has a show of probability. Only when the resistance is brought within certain bounds is it possible to work to advantage with the patient. There are dreams which are signs of resistance, though this feature may not be at once obvious; they consist of a working over of the latent dream thought, much as in the successfully elaborated works of artistic imagination. They are not interpretable, the content merely serving as guide to more significant material.

(3) A distinction is made between dreams from above and dreams from below; the latter being the result of a repressed wish which presses through from the unconscious; the former having a value similar to that of waking thoughts or purposes reinforced by matter from the unconscious. In these dreams from above the analysis usually disregards the material from the unconscious and ranges the dream thoughts with those of the waking life.

(4) In some cases there is a splitting of the train of waking thoughts from that of the dream thoughts, so that the dreams constitute a sort of self-consistent, continued narrative, like imaginative creations.

(5) The interpretation of dreams falls into two phases—the translation and the judgment concerning the material. In carrying out the first process care should be taken not to permit the thought of the effect the interpretation might have on the judgment influence the interpretation itself. Just as in reading a chapter of Livy the translation must first be made before it is possible to decide whether the subject matter is history or legend. Too great respect for the “unconscious” is often the source of prejudiced judgments and error. A recovery dream is not always a sign that a neurosis is disappearing: it is more often only a wish to be well for the purpose of avoiding a painful situation in the treatment—an effort to follow the line of least resistance; just as the soldier suffering from war neurosis gets well and returns to duty when the military physician understands how to make being sick unpleasant.

(6) The ambivalent attitude is a source of difficulties in the interpretation. The occurrence of hostile thoughts is not evidence that an attachment has been permanently overcome, nor is the dream of hostile character evidence in this direction; from this ambivalent attitude two dreams in the same night may reveal opposite feelings. The fundamental isolation of a certain attitude is the only proof of an advance in the analysis, and the real condition of the conflict can only be inferred from the entire behavior, inclusive of the waking life.

(7) The influence on the dreams of suggestion on the part of the physician is discussed. Opponents of psychoanalysis frequently cite this factor as one which casts doubt on its value. As the treatment constitutes one of the impressions of the waking life, it naturally follows that it would have an influence on the manifest content of the dream. The latent thoughts also, in so far as they consist of preconscious material,

among which may be the reactions of the patient to the suggestions, words, and actions of the analyst, are susceptible to the influence of suggestion. But the basic mechanism of the dream formation, the real dream work, is not susceptible to influences from without. Every dream, besides all the other factors, contains an element from the unconscious, which is the real cause of the dream, and this is not suggested. The skeptic may say that this element appears in the dream because the analyst expects it to be there, but the analyst has good reason to think otherwise. While it may sometimes happen that during the analysis, dreams which have reference to past situations in the patient's life make their appearance only after interpretations of his symptoms have been made, yet there is ample evidence that the unconscious wishes are not suggested; as for example the fact that the repressed material makes its appearance gradually, and that the patients recollect dreams dating from before the analysis, which lead to the same discoveries as the dreams during treatment.

(8) It is observed in some instances that the dreams during the analysis bring more repressed material to light than do the dreams when no psychoanalysis is in progress. There must therefore be a reason for such results—an unconscious influence which is fitted to further the aims of psychoanalysis in sleep. This influence, Freud believes, belongs to the parent complex. The patient's docile attitude toward the parents is repeated in the transference. Freud has never disputed the part played by the "suggestion" in this sense, but finds that the value of the dreams in other directions is not invalidated thereby.

(9) Dreams which occur in traumatic neuroses and repeat the traumatic situation are probably the only exceptions to the rule that the dream is a wish fulfillment. Punishment dreams seem to be an exception but closer study shows that none of the latent dream thoughts are taken up in the manifest dream content, but that the dream is a reaction formation containing a full negation and contradiction due to an intervention of the censorship, set into activity by the emerging of an unacceptable wish. The process is really a modification of the one by which a single element of a latent thought is represented, in the manifest content, by the exact opposite, being in the case of the dream a device for avoiding the disturbance of the sleep.

(10) In his final section Freud notes that the ego can assume various images in a dream. This is due to secondary elaborations in the attempt to represent the various sides of the dreamer's personality. Freud regards the view that every person appearing in the dream represents the dreamer as unfounded and mere speculation. It is unnecessary to go further, he believes, than to assume that in the dream as elsewhere the ego can take other forms than that of an observing, criticising, censoring force (the ego ideal).

Shaw, Joseph C. NEUROLOGICAL DISEASES AS MANIFESTED IN GYNECOLOGICAL PRACTICE. [Jl. Kansas Med. Soc., Vol. 23, Dec.]

Neurological diseases occupy a rather unique field in the practice of medicine and most medical men are coming more and more to believe that the gynecologist must, to some extent, be a neurologist and psychotherapist to such an extent that he will be able to recognize such diseases in general and also the recognized manner and mode of treatment.

Our business, social and economic life with its complexities and strenuous demands is to a great extent responsible for many of the nervous conditions encountered by the gynecologist, and our first effort along the line of treatment should be a better genealogy, a better heredity and a better environment, looking forward to a greater self-control.

Our young girls should be so judiciously trained and managed as to quietly and sensibly meet the exigencies of life at the formative period as this is the time when the substructure is laid for future nervous conditions or a strong and vigorous womanhood.

We are placing too much stress on intellectual development and on cultural education to the neglect of the physical organism.

Our primitive women had few of these functional neuroses, while at the present time we find them most common in the cultured and in the educated.

This condition is so frequent in the cultured and educated that it could be called "Cultured or Educational Neurasthenia."

Most gynecological patients who consult us may be placed in one of three classes:

1. Those women who have a well defined gynecological lesion, but as far as we can ascertain have no definite nervous symptoms.
2. Those women who have a definite pelvic lesion which is responsible for the existing nervous condition.
3. Those women who have a well defined nervous state which is aggravated by the gynecological lesion.

The relationship of menstruation to neurological diseases: Menstruation is a peculiar and highly specialized function of the woman occurring regularly during the period of productivity, brought on by ovarian hormone activity and balanced by anabolism and by katabolism. Not all women with menstrual derangements have pronounced or neurotic symptoms, but it is quite significant the number who have nervous manifestations and at the same time have menstrual anomalies.

In melancholia we are apt to have scanty menstruation, dark, tarry, and more or less offensive with dysmenorrhea.

It is rather significant the number of cases of mania and delusional insanity with regular menstruation and the number of cases of melancholia with amenorrhea. Also that the majority of cases with mental and nervous symptoms are aggravated by the coming of menstruation.

In many of our cases we have an existing primary pathological

neurosis which is increased or exaggerated at the menstrual period, and in many of these women we find criminal or suicidal tendencies. In others we have erotomania, kleptomania, or dipsomania. In still others we have an overamount of energy, the woman works all the time, a regular mania, called ergasiomania, while others are just the reverse and are perfectly satisfied with whatever conditions surround them—ersasiophobia.

Neurological diseases may be associated with diseases of the brain or with diseases of the body, indirectly affecting metabolism; or conversely faulty metabolism may indirectly affect the mental and nervous system, the neurosis in many of these cases being the mental expression of the bodily disease; or it may be due only to a maladjustment of the individual to herself or to her surroundings.

Many of the gynecological cases coming to us for diagnosis and treatment are due to definite toxic conditions of the system; to deficient hormone activity; to chronic irritation of the pelvic or sexual organs. Others are the outgrowth of lack of early parental training or the absence of self-control; others are imaginary; and still others are definitely sexual due either to overactivity, misdirected habits, or to unsatisfied sexual desire.

A neurosis or a neurological disease is most of the time misunderstood by both the patient and her friends and the term is used largely to cover our own ignorance, or, we might better say, for want of a better word.

We usually define it as a pronounced nervous manifestation or a combination of manifestations, functional in their character and independent of any real organic lesion. However, many gynecological cases have a definite and well defined organic injury.

It is essential that we emphasize the necessity of carefully and systematically examining each woman coming to us for treatment as by so doing we can best arrive at something like a definite and satisfactory diagnosis which is the first essential to successful treatment: This will include the real everyday work life; the marital life; the social life; and the economic life of each woman.

Emphasis should be placed on sensible and conservative treatment and the hearty coöperation of the neurologist and the gynecologist as by so doing fewer mistakes will be made and a greater and more lasting benefit will be derived by the patient. [Author's abstract.]

Jokl, R. H. ON THE PSYCHOGENESIS OF WRITER'S CRAMP. [Int. Zeit. f. Psa., Vol. VIII, No. 2.]

The author notes that, in psychoanalytic literature, but little attention has been given to the nature and origin of writer's cramp, and that it is still an open question whether it is to be counted among disturbances caused by abnormalities in libidinous satisfaction. The author cites

an example to illustrate the real source of some of the therapeutic results ascribed by clinical neurologists to massage, rest, galvanization, etc. A patient had spent much money and time in the effort to be cured of writer's cramp and finally a certain physician succeeded in bringing about improvement. The patient remained free from his disturbance for a year and then suddenly it returned. Investigation revealed the reason for this attack: the physician who had accomplished the cure had left town, showing that the improvement was due to the transference, that is, to suggestion. The author then describes an instance in his own experience, an obstinate case of writer's cramp which was referred to him for psychoanalysis as an ultimatum refugium, though the patient had no great faith in analysis, in fact knew little about it. The cramp had troubled him for about eleven years. It took the form of a more or less rigid stiffening and trembling when he attempted to write, though he could carry out other performances with the hand normally. The symptom was not constant. He was ashamed of his weakness, which he felt interfered with his usefulness in his occupation. The first manifestation of the disturbance the patient traced to an occasion when he was required to sign his name in the presence of a business superior. His hand began to tremble and he felt unable to make a single stroke. A kind remark of the superior only increased his embarrassment (indication of the phobia of being noticed).

When the analysis was begun there was an extremely strong transfer which clearly indicated a father imago. The necessity for a relation of sympathy with the physician, for identification, concomitantly with tendencies to contradiction and enmity suggested that the rôle of the father in the genesis of the neurosis was more significant than one would be justified in inferring from the mere fact of a strong transference. It seemed that there was an effort to become free of a pleasure toned wish, which was especially intolerable to consciousness, and that this wish found quantitative representation in the tenacious clinging to the transference. Jokl was able, in fact, to discover a strong fixation to the father, characterized on the one hand by the desire to observe and touch the penis of the father, and, on the other, by the sadistic wish to castrate the father-rival. A sense of guilt arose from the fear of castration and manifested itself in later life in a sense of inferiority, with particular reference to sexual potency, paralleled by the "impotence" due to the writer's cramp (*i.e.*, inadequacy in his calling). The castration-fear found expression in anxiety when he attempted to sign his name before his superior, the father surrogate. Taking the pen in the hand symbolized the forbidden homosexual desires. The hand, the guilty member with which he had carried on auto- and homoerotic activities was more susceptible than any other member and the symptom made its appearance there.

In this analysis Dr. Jokl gained the impression that the urethral com-

ponent outweighed the anal erotic which has the same origin and belongs to the same developmental stage and constitutes, therefore, more than a mere accessory symptom in the obsessional neuroses (Hitchmann). The incidence of the neurosis was at a time when the patient was going through an actual conflict. Deciding to marry, he had deserted a girl with whom for years he had indulged his infantile tendencies, without the slightest explanation, justifying himself with the resolution to write to her later. This was then a conflict in which the act of writing was a significant moment—a conflict between reality (represented by his prospective wife), and his infantile libido (represented by the girl). Despite the patient's assertion that his married life was happy, his dreams showed that his conflict was not solved and that the unconscious was still oriented in infantile directions, so that his symptom received constant support from the still active repressed wishes. Commenting on the difficulty in overcoming the real conflict in this case, Jokl says that while the task of the therapist is not so much to get rid of symptoms as to remove the psychic foundation for them, yet where, as in the present case, the symptom through the harm it does to life and calling, lends the character to the neurosis, the removal of the symptom becomes a practical goal of the therapeutic measures. The fact that he was able to reduce the symptom was a valuable indication of the direction in which treatment promises good results.

In a small number of other cases in which writer's cramp or components of it constituted a subordinate or nonessential symptom, Jokl was able to discover a similar mechanism. These patients were all neurotics in which the anal, or more frequently, the urethral impulse was strongly emphasized and had become the foundation of a sadistic-homosexual attitude. He warns, however, against too hasty generalizations.

Hobson, Sarah M. MENTAL HYGIENE: THE OPPORTUNITY FOR THE FAMILY PHYSICIAN. [Ill. Med. J., Vol. 48, Oct.]

The fundamental principle of mental hygiene is to detect early deviations from a normal condition. This is the opportunity of the family physician. If he is well trained, he knows at least when he needs counsel and where to go. If he has had experience, he is keenly alive to the hopefulness of the present forward movement in mental hygiene of children. The problem of a so-called functional disorder is just as real as that of a ruptured appendix or a broken bone. What can be more important than the study of the integrating apparatus which controls every life process? Mental hygiene is essentially preventive medicine. Preventive medicine is largely educational. Half the business of the family physician is pedagogic. Mental health is an equilibrium of feeling, thinking, doing. Mental health involves a good environment during the formative period of childhood, added to a good inheritance and co-existent with training in

conscious choice of that which makes for good. The frequent recurrence of the theme "Mental Hygiene" on popular and professional programs is essential for publicity. But scientifically the most important factor today is the research institute making definite inquiry into causes and remedial measures. Material for study is found in any group presenting a problem child, be it hospital, institution, court, school, playground or home. The general practitioner gets the first chance at most of these. If he knows as much psychology and psychiatry as he does anatomy and chemistry, he is in a position to follow up and relieve the maladjustment or refer such to the specialist who may be better able to direct treatment. The alarming increase of incompetents, delinquents and criminals, and therefore dependents, raises the question of denial of reproductive ability to such a group. Fundamental to this is the abnormal home relationship in childhood, the problem child, the misfit.

There is a mass of evidence from juvenile court records, from school records of misdemeanors of children too young to be referred to the juvenile court but growing up in homes where there is no incentive to honesty, from repeaters in the boys' court who reappear in the morals court and in the court of domestic relations. There is an immediate demand upon our civic groups to consider the extravagance of noninterference with such progeny and with the immigration of such as will increase the defective and the delinquent population. It ought to be possible to appoint a commission responsible and with power to act upon such a program. Such a commission might include a psychologist, a psychiatrist, a lawyer with juvenile court experience, a churchman of open mind and an economist who is social-minded. Prevention of crime historically is based on punishment. Scientifically, it is based on removal of handicap, segregation and occupation, with vasectomy or tubectomy for repeaters and defectives. Fundamentally, prevention of crime demands study of adolescence and of little children. Surgical relief which does not impair physical characteristics will be accepted ultimately. Segregation and supervised occupation will come slowly because they involve immediate outlay in an unaccustomed way. The removal of handicap makes a popular appeal and there is universal assent to the study of the problem child. The Danville (Pa.) State Hospital, the Habit Clinic (Boston), the Commonwealth Fund and Physicians' Fellowships (New York), the La Salle-Peru-Oglesby (Ill.) experiment, the Vancouver (B. C.) investigation into faith healing, the industrial work shop operated under the Jewish Charities (Chicago) and sundry social groups cited illustrate present day activities. The opportunity of the family physician is to be alert, to discover early deviations from normal, to stimulate the laity to an intelligent interest in mental hygiene, to carry on with patience and persistence until there is an adequate medical corps to staff all the child clinics needed and until the laity keeps pace with science. [Author's abstract.]

Weiss, E. THE PSYCHOANALYSIS OF A CASE OF NERVOUS ASTHMA. [Int. Zeit. f. Psa., Vol. VIII, No. 4.]

In the course of the analysis of a very neurotic patient a nervous asthma, which had existed previously, became very much worse. The complex from which the asthma arose being represented by other symptoms also, it was difficult to isolate the unconscious origin. For the purpose of comparing this case with that described by clinicians as bronchial asthma the patient was subjected to a rhinological examination, but nothing worthy of note was discovered. The disturbance of breathing was inspirational as well as expirational but perhaps more pronounced in the latter phase. After the disturbance had continued for some time bronchitic phenomena made their appearance together with a very troublesome cough resembling whooping cough. The asthma seemed to be the expression of a futile protest against irremediable injustice, which, from the anamnesis, the patient had suffered from the mother. He had a strong ambivalent mother fixation. Through the psychoanalysis the patient's sexual interests were aroused and he was happily married, but at various crises his asthma returned, for instance when his wife became pregnant; the asthma continued throughout the months of her pregnancy and disappeared when she was delivered of a healthy boy. Although the analysis failed to free the patient entirely from this symptom it permitted him to gain an insight into his condition; the asthma seemed to have become a fixed mode of expression for affect, like blushing, laughing or crying. Commenting on the mechanism Weiss says: in this patient the asthma seemed to have a mechanism very similar to phobia yet with some difference. It made its appearance as a reaction to the separation from the mother, on whom the patient had a strong fixation, and indeed in the passive attitude of receiving protection. Various situations, as for example the fear of not getting along, fear of loss of position or of the means of livelihood, were displacement substitutes for the original situation. The analerotic seemed to play an important rôle but that the analerotic retention had been displaced to the respiratory tract could not be affirmed. A peculiar masochistic attitude was also effective and must not be underestimated. A well developed sense of smell was a contributory factor, to the degree that the term "smell and inhalation erotic" is suggested, a factor which seems to be closely connected with the anal- and oral-erotic. Weiss compares his case with others described in the literature. Sadger and Stegmann have traced the psychogenesis of asthma in articles published in 1911. Wulff published an article in 1913 and finally Marcinowski published a long account of an analysis in 1913; he placed asthma among the psychoneuroses, as a partial phenomena of anxiety hysteria. None of the conclusions arrived at by these writers agreed with Weiss', but Federn has referred to a case of asthma which occurred as a reaction to the separation from the mother, and the mother substitutes: "In the unconscious it was always for the mother that the patient was crying,

until he lost breath—just as a small child does.” Federn also noted the dominance of the sense of smell and the oral zone as constitutional components.

Searl, M. N. A CHILD STUDY. [Brit. J. Med. Psych., Vol. IV.]

Some children, by force of disposition or circumstance, show far more clearly than others the dynamic springs of character and reaction at work in all. The above is an account of one such child, a little girl of six, observed in ordinary social life, whose phantasies as well as her outer reactions were unusually transparent, particularly as to the connection between the desire for knowledge, a longing for presents, even to the point of self-appropriation and phantastic lying, on the one hand, and the big mysteries of birth and marriage on the other. Further, a quite spontaneous drawing gives unmistakable evidence that the phantasies of birth processes proceeded along the lines of other physical processes already long familiar: a hare has just laid an egg in a chamber inside a bed-table, on which stands a cup of chocolate, and the hare is labelled with the child's own name and place of birth.

A particularly interesting series of reactions showed an effort to satisfy a sense of guilt and draw down a reprimand on phantastic grounds; while in the course of a phantasy of a gift to her of all she wanted belonging to him by a man (father), anger with the mother-substitute emerged, only to give way after abreaction of anger and feeling of rivalry to an attempt at identification—in effect, “If I can't take your place, the next best thing, after I have ceased to feel so angry and hurt about it, is that we should be as like as possible.” This repeats as concisely as possible an important phase in normal development. [Author's abstract.]

Oberndorf, C. P. THE ROLE OF “ORGAN SUPERIORITY” IN A NEUROSIS. [Int. Zeit. f. Psa., Vol. VIII, No. 3.]

Oberndorf describes a case to show the vulnerable points in Adler's view on organ inferiority. Following Adler's theory, he says, the neuroses originate in organ inferiority, either a congenital or early acquired real weakness which engenders feelings of inadequacy in competition with other children and spurs on to special efforts in certain directions; or in the weakness which children have in comparison with adults, which results in the “masculine protest.” With this doubtful assumption and apt phrase Adler attempts to discredit the importance of the sexual instinct and dispose summarily of the most difficult problems. Freud admits a certain justification for considering the instinct of aggression as a factor in the neuroses, but does not regard this element in itself as of a nature to explain the symptoms, being but a partial impulse of the ego-libido. In the present understanding of Freud's view of the instincts aggression (the masculine protest, will to power) approaches, in the pregenital stage, very nearly to the tendencies of the analsadistic group. Marcinowski has

expressed the opinion that it is very doubtful whether the will to power can be called an independent goal and asserts that the feeling of inferiority makes its appearance only in later years at the time when the confidence of the child has been destroyed by the refusal of love and disillusionment of life. The "organ superiority" in Oberndorf's patient consisted in the extraordinary size of his penis, and it was this overdevelopment which lent the stamp to the neurosis. There was psychic impotence on a homosexual basis. Without going into a complete analysis of the case the author seeks to show that pronounced congenital overdevelopment of an organ was in later years connected with conditions which Adler says are due solely to organ inferiority. Under psychoanalytic treatment the patient was so far cured as to undertake marriage and from the latest accounts seemed to be on the way to a normal, sexual life.

Jones, Ernest. THE THEORY OF SYMBOLISM. [Inter. Zeit. f. Psa., VIII, No. 3.]

A short résumé of the introductory sections of this article appeared in the Psychoanalytic Review, Vol. IX, 1924, p. 470. The whole article has appeared in Jones' book "Papers on Psychoanalysis," 3d edition, p. 154 (William Wood and Co.). His conclusions as given in the present article are: "The essential functions of all forms of symbolism, using the word in the broadest and most popular sense, is to overcome the inhibition that is hindering the free expression of a given feeling-idea, the force derived from this, in its forward urge, being the effective cause of symbolism. It always constitutes a regression to a simpler mode of apprehension. If the regression proceeds only a certain distance, remaining conscious or at most preconscious, the result is metaphorical, or what Silberer calls "functional" symbolism. If, owing to the strength of the unconscious complex, it proceeds further, to the level of the unconscious, the result is symbolism in the strict sense. The circumstance that the same image can be employed for both of these functions should not blind us to the important differences between them. Of these the principal one is that with the metaphor the feeling to be expressed is oversublimated, whereas with symbolism it is undersublimated; the one is an effort that has attempted something beyond its strength, the other is an effort that is prevented from accomplishing what it would."

Bethe, A. STATISTICS ON LEFT AND RIGHT HANDEDNESS. [Deut. med. Woch., Vol. 51, April 24. J. A. M. A.]

Bethe concludes that the statistics made on adults give only the percentage of persons who are unable to overcome left handedness. Corresponding statistics on exclusive right handedness are lacking, but the results in amputated people show that such subjects are also rare. He examined small children and found that a marked preference of one hand between two to four years of age is evident in an equal percentage (16.7 per cent) for the left as for the right hand. The localization of the

center for speech in the left hemisphere seems to be more frequently congenital. Yet its relation to the preference of the right hand is not as clear as it seemed to be.

Inman, W. S. EMOTION AND EYE SYMPTOMS. [Br. Jl. Med. Psychol., Vol. II, p. 47.]

An interesting communication showing that at least one oculist and ophthalmologist is getting to grips with the psychological factors which lie behind "eye strain" and other ocular symptoms such as "headaches, tics, insomnia, photophobia, watering of the eyes, squint, scotomata," etc., etc. The American craze for treating psychical situations by eye-glasses is recognized in its farcical extravagances. Americans are wearing glasses by the million for eye strain. The French rarely wear them. Are the French less afflicted with eye strain? The answer reveals the "oculist propaganda" in America. Some cases of "eye strain" cured by healthy love relations rather than by glasses are amusing sidelights on the hocus pocus of the "ideal eye" of the oculist. This paper is well worth underscoring as to be read by the psychotherapist. The oculist in general does not dare to read it. It may show him up too much as of a stupid doctrinaire, more interested in the economics of fitting glasses than really understanding the real reasons for his patient's illness.

Léopold-Lévi. NEURASTHENIA AND SUPRARENAL DEFICIENCY. [La Vie Médicale, December 19, 1924.]

This optimistic endocrinologist recapitulates the salient points of suprarenal deficiency, both experimental and pathological, with special reference to psychoneurotic symptoms. He describes in detail ten cases (eight women and two men) who suffered from profound neurasthenia, in some cases amounting to melancholia, with suicidal impulses. One man had contracted malaria in the Dardanelles and had a feebly positive Wassermann reaction after a full course of "grey oil" and arsenobenzol. All the patients improved rapidly after oral or hypodermic administration of powdered suprarenal gland, 0.25 cg. to 1 gram daily. Some of the patients appeared to suffer from congenital suprarenal deficiency (two were sisters), and several other patients presented evidence of latent tuberculosis. In some of the women suprarenal deficiency was associated with ovarian deficiency. In such cases Léopold-Lévi suggests the administration of ovarian extract together with suprarenal powder or extract. Several patients had been ill for a long time—three to seventeen years—but these recovered quickly under treatment.

Flournoy, H. DREAMS ILLUSTRATING THE SYMBOLISM OF WATER AND FIRE. [Int. Zeit. f. Psa., Vol. VI, No. 4.]

This article has been translated in full in the International Journal for Psycho-Analysis, Vol. 1, No. 3, and was reviewed in the Psycho-analytic Review, Vol. 9, p. 459. Briefly, dreams are given in which

sentiments of inferiority, of sexual ambition, of erotic tendencies, and of incestuous feelings displayed themselves in a symbolic way by borrowing the images of water, liquid, or fire. Under their apparent diversity these dreams expressed the fundamental complexes which are at the basis of the psychoneuroses. Referring to Jasper's criticism that Freud confounds intelligible with causal relations, Flournoy hesitates to claim that complexes of infantile origin were the "causes" of the dreams, but considers the fact demonstrated that these diverse psychological manifestations present in themselves definite interconnections.

Janet, Pierre. UNREAL MEMORIES. [Arch. de Psychol., Vol. XIX, No. 73.]

The author presents observations of four patients who all having conserved in reality a fairly complete memory had nevertheless the impression that their memories were transformed, incomplete, and they had lost an essential part. These anomalous feelings were in direct rapport with other troubles which bear upon the feeling of the personality, on the idea of time and the appreciation of duration. The author interprets these phenomena in the light of the psychology of action. There are those entire attitudes of the body, those directions of movement, not to consider of acts, which are expressed by our words, our expressions, and which permit them to be situated in space. They are these secondary attitudes which disappear the moment when the involved subjects express the subjective unreality of their memories. The author rejects all those interpretations based upon the so-called coenesthesiae and other peripheral disturbances not demonstrable by experience. The occurrence of tears and of respiratory modifications which one can bring about in these patients does not suffice to replace the acts or the beginnings of the acts which constitute the interest. It has not escaped the author that the feeling of unreality of the memories in the patients studied could be the result of an eclipse of rapport with variations of neurovegetative tonus. Without developing this point however, Janet thinks that it depends in great part upon the exhaustion of central activities.

[R. Mourgue (Nîmes)].

Herz, M. NEUROSES AND UNSUITABLE HOUSING. [Wiener klin. Woch., Vol. 74, Nov. 20.]

Herz publishes the histories of five patients to illustrate the significance of the distress in housing conditions as a provoking cause of neuroses and psychoses. The content of the psychosis was also influenced by it.

BOOK REVIEWS

Podkopaew, N. A. DIE METHODIK DER ERFORSCHUNG DER BEDINGTEN REFLEXE. [Verlag von J. F. Bergmann, München.]

The "conditioned reflex" is in the air. It has been hovering around for the past 20 years or more in loose liaison with associational psychology and now become semipopular in physiological circles. Psychiatrists have been buzzing about it, ever since the theologians expressed the thought that as the "twig is bent, the tree's inclined."

Here the general methods of demonstration of Pavloff's many years of experimentations are clearly set forth and we can commend this little book to our readers.

Munro-Macleod, D. G. THE PSYCHOPATHOLOGY OF TUBERCULOSIS. [Oxford University Press, New York and London.]

Here is certainly a great opportunity! At least this was our thought as we read the title of this work. For certainly tuberculosis is one of the most widespread of all diseases, and since it is our conviction that no chronic disorder of this general type is without a psychical component, any study dealing with its psychopathology cannot fail to be of great importance in the larger frame of reference concerning the meaning of such a disease.

More than a decade ago, stimulated by two of the leading phthisiologists of this country, representing the leading sanatoria of the East and West, the reviewer made an excursion into this field. Presenting his contribution to the supposedly leading editor of the country, his article was returned "as not being of interest to the general practitioner." This was the amusing deduction—tuberculosis was not of interest to the general practitioner. The article found favor with an editor who published a periodical devoted to tuberculosis.

Since this time the mental factors in tuberculosis have been more and more placed in the foreground and the present work, sponsored by an international publishing firm, is evidence of this fact.

Even so the present author is not in touch with the actual situation. He has given an excellent superficial review of the problems, revealing an association between psychopathological factors and the disease, but he has not gone to the root of the matter. To him the psychopathological manifestations are largely interpreted as toxic factors due to the infection, rather than showing the psychical factors which permit and foster the infection.

He narrates earlier conjectures and observations from Richard Morton, in 1689, who called attention to mental symptoms in tuberculosis, but of the work of modern psychopathologists upon this

disease there is no mention. Maeder's contributions for instance are not even given in the bibliography and other carefully analyzed cases are not mentioned.

The work, however, will be of service as calling attention to the fact of the importance of the subject, even if it is painfully anecdotal and superficial. Is is an illustration of another of those lost opportunities in which the cart is put before the horse and mankind goes on in its blind, blundering way hipped by old ideas of causality.

Bouyer, Henri, and Martin-Sisteron. *L'HYGIENE MENTALE ET NERVEUSE INDIVIDUELLE.* [Norbert Maloine, Editeur, Paris.]

Professor Henri Claude in his introduction tells us that this work is an innovation, in that "mental hygiene" much discussed from many sides, is here made the object of a didactic presentation. "What faculté," he writes, "dares to propose questions of mental hygiene?" By way of premature interpolation we might say, perhaps this may be true for France, but its direct opposite is true of the United States. Hardly any faculty here would think of omitting examination questions concerning mental hygiene—but then it may be admitted that this particular discipline has shown great developments in the United States. Claude speaks of his own efforts to interest physicians in this important work, to which so much attention has been devoted with us.

The authors themselves tell us in their own introduction that mental and nervous hygiene is no new preoccupation. Philosophies, religions, and a special literature, quite ancient, has dealt with the problems, often quite happily, but then again only superficially and faultily. Of late years, however, mental hygiene has emerged as a definite and practically organized science. It is to this aspect they would devote their attention.

And this they do in an extremely readable manner. They first show how a hygiene of the body has occupied the attention of mankind to the detriment, in emphasis, upon a higher type of hygiene, that of the mental activities of mankind. Fortunately the tide has turned and "*mens sana in corpore sano*" is not as important a shibboleth as it was of old.

They first attack the prejudice of "heredity" but do not entirely escape from the "hobgoblin." They must drag in some of the ghosts of the heredodegenerations so well known. It fills a few pages, but in the main they are optimistic rather than pessimistic on the outlook.

Chapter II deals with the fight against toxic and infectious factors, which they wisely note have a tendency toward self-correction. Chapter III deals with moral prophylaxis of the neuroses and psychoses, in which, to us at least, the emphasis is wisely placed upon "affective tendencies." Here the hygienist has something with which to work. This brings us up to page 68 after which the authors take up the questions of mental and nervous hygiene in different phases of human life. They deal with early infancy first, then with the family life before the age of puberty. Freud's conceptions are here spoken of as "noncontrovertible," and the old Mosaic "terror"

types of education—"sont souvent fort nuisibles à l'esprit ou aux nerfs." The "crisis of puberty" is very intelligently and emphatically handled in the next chapter. School life, professional orientation, for boy and girl, marriage and virginity, middle age, menopause and the age of retreat, these are the titles of the four succeeding and able chapters, while involution and mental adaptation to physical ailments complete this section.

Section three deals with the hygiene of special nosological situations, such as Abnormal Constitutions, Emotional and Obsessive States, Hysterias and Mythomanias, Paranoid States, Cyclothymics and Schizoids, Perversions and Feeble-mindedness.

Section four deals with acute conditions, and first aid to various pressing situations.

Frankly this is a very helpful work. Its motto or slogan is the "love of life." It is very delightfully written and in the main most sound. Our first impression on rapid reading is that this is a work that should be translated into English and be given a wider circle of readers.

Cornillier, Pierre Émile. LA PRÉDICTION DE L'AVENIR. [Libraire Felix Alcan, Paris.]

For ourselves the present and its problems keep us so busy that we quite definitely state we are not much interested in the future, *i.e.*, the kind of future which concerns the author; *i.e.*, the life after death. It may be all that he says it is, as revealed through mediumistic seances. There are many who are interested in this aspect of speculative activities. They may find this work of value. We pass no judgment, but simply chronicle the fact of its finding paper and type and phrases to record the conceptions of the author. There are about 100 pages of these, certainly not so many to read as others have thought imperative to thrust upon a curious world.

Blum, F. STUDIEN UEBER DIE EPITHELKÖRPERCHEN, IHR SEKRET, IHRE BEDEUTUNG FÜR DEN ORGANISMUS, DIE MÖGLICHKEIT IHRES ERSATZES. [Gustav Fischer, Jena.]

This is a very instructive and detailed study of the activities of the parathyroid in a well illustrated and documented monograph of some 140 pages, a contribution from the Biological Research Institute of Frankfurt-am-Main by its scientific director, Professor Blum.

The study is based chiefly upon animal experimentation, the complete details of which are given. As far back as 1903 the author made the observation upon a cat who when put upon a milk-blood diet after complete removal of the thyroids and parathyroids failed to develop the usual lethal results of tetany, later to succumb when placed upon an exclusive meat diet. From this a series of experiments were planned with a number of variations with different food products and an effort made to learn what was the significance of the milk in its seeming capacity to obviate the usually fatal results of complete thyroparathyroidectomy. What these relationships were

is made the subject of a great number of experiments the details of which cannot be entered into here.

The general results would seem to indicate that the parathyroid contains a hormone which is activated outside of the organ itself and circulates in the blood. During lactation a certain amount passes into the milk and gives to this substance some of the characteristics of the parathyroid hormone. This hormone has a wide activity and serves chiefly, the author thinks, as a protection against a variety of autotoxic influences chiefly observable in the central nervous system, the bones and teeth, and also operates in regulating the blood calcium, the iris and lens, the kidneys, liver, and other organs. These suggestions apply to many disturbances in pediatric as well as in psychiatric practice and are well worth further investigations.

This is a stimulating and very suggestive study.

Dana, Charles L., Riley, H. A., et al. THE HUMAN CEREBRO-SPINAL FLUID. Proceedings of the Association for Research in Nervous and Mental Disease, New York, Dec. 29-30, 1924. [Paul B. Hoeber, Inc., New York, 1926.]

This is the fourth volume of the Proceedings of this Research Association and gives the chief papers read at this meeting in 1924 with the questions put by the Commission. It is a very full volume of 565 pages and represents fairly adequately the present day knowledge of the cerebrospinal fluid. At least 39 members of the Association contributed to it.

The normal fluid is discussed by Timme, Hughson and Craig; the biological, chemical and physical properties in health and disease are dealt with by Kolmer, Ayer, Solomon, Fremont-Smith-Kennard, Dailey, Cockrill and Eckel. Pressure studies are detailed by Ayer, Fremont-Smith, Hodgson, Stookey, Nerivan, Frantz, Howe and Aycock. Diagnostic replacement studies are made by Grant, Mixter and Liberson. Central nervous disease changes are contributed by Strauss, Kaliski, McClean, McIntosh, Regan, Patten, Hassin, Solomon, Spurling, Maddock, Pons and Fletcher. Alpers, Forbes, Weller and Christensen deal with changes due to extraneural disease—and the treatment of pathological conditions through the cerebrospinal fluid is discussed by Pollock, Favill, Fordyce, and Neal. A list of the members of the Association and an index completes this very creditable performance which no student of the nervous system can afford not to possess.

Jean, Pierre. LA PSYCHOLOGIE ORGANIQUE. [Felix Alcan, Paris.]

The author entitles his work a theory of life and discusses it most entertainingly and not without considerable originality. To those acquainted with the thought of Samuel Butler, of Semon, Maudsley and Bose the present presentation will prove of great interest and biological students in general will find it valuable.

He opens with a very radical chapter on prejudices in biology.

This leads to a consideration of the proofs of a psychology of organic matter. From here he details plant tropisms of various types, thermotropisms, chemotropisms, geotropisms, much of which we are familiar with through Loeb's work on tropisms in general. Then the lower animal organic responses are discussed from a similar point of view and general problems of animal development follow.

Organic psychology is a widespread and universal type of primitive endowment found in all living cells. Memory, routine hereditary response, calculation and adaptive response are found from the lowest to the highest, differing solely in degree, volume and rapidity and finally reach a summation in neural conscious activities reaching from the atoms to the stars. Here is an excellent presentation of that old doctrine of the "wisdom of the body" and a restatement of the position taken by many of to-day that the psyche is as old as the soma and are one.

Petrén, Karl. LES DIFFÉRENTES FORMES DE L'ARSENICISME ET EN PARTICULIER DE L'ARSENICISME PROVENANT DE L'HABITATION OU DES OBJETS DOMESTIQUES. [Masson et Cie, Editeurs, Paris.]

Professor Petrén of Lund has for many years been studying the effects of arsenic upon the human body and particularly following out investigations of the many sources from which this substance may be taken into the body.

He has here collected these and incorporated them into a monographic study of the entire problem, the most detailed and well analyzed that may be found in any literature.

The immediate provocation of the main thesis followed upon an epidemic (psychical) of arsenical poisoning in Sweden with the consequent appointment of a commission to study the problem, of which Professor Petrén was made the president. Careful microchemical tests were elaborated so that all sources of arsenical poisoning from the fish of the sea to wall papers, etc., were subjected to careful investigation.

The commission first established a questionnaire—some of the responses are detailed. The positive cases which came out of this inquiry are then subjected to a minute analysis.

It is a most interesting and valuable array of material from which there emerges a number of positive conclusions of much value which must be read in the original.

Ramos, Arthur. PRIMITIVO E LOUCURA. [Imprensa Official do Estado, Rua da Misericórdia 1, Bahia, Brazil.]

The genetic method in psychiatry has found favor not only here in the United States, following the genial stimulus of Stanley Hall, but has been responded to in various quarters of the globe.

Here in an inaugural thesis presented to the faculty of Bahia in Brazil the author has utilized the principle of folk lore in the study of psychiatry and has contributed a very valuable study to comparative psychiatry. The author shows himself well oriented to the

general literature not only to the studies of Max Müller, of Tylor, Frazer, Levy-Bruhl, Tanzi and other schools but also to the newer work of Schilder, Piaget (on infant psychology), Freud and the results of psychoanalytic research.

Apart from his command of the general literature his work is specially interesting as bringing to attention much work that has been carried on in the Latin countries of South America along analogous lines. The work is quite readable in spite of certain linguistic difficulties and the author is to be congratulated upon a very up-to-date monograph upon a subject of much importance in contemporary psychiatry. It may be mentioned that this thesis received "honorable distinction" by his faculty.

Lloyd, Ralph I. VISUAL FIELD STUDIES. [The Technical Press, New York.]

One rarely realizes that the great mass of very important facts about the visual fields and the optic nerves have been only about 50 years in the making. Their significance to neurology is enormous. This little work is a serious and well ordered review of some of the more important of these facts. We wish it a wide recognition.

Erhard, Ignaz. SEELISCHE URSACHEN UND BEHANDLUNG DER NERVENLEIDEN. [Herder and Co., Freiburg and St. Louis, Mo.]

This small volume would offer some general suggestions as to mental and moral influences in the therapy of psychoneuroses and mild psychoses. It belongs in general to the lay reader and to those efforts of bringing the church and medicine together. It would combine such essentially divergent conceptions as those of Freud, Adler, and Coné into a potpourri of opportunistic therapy. It is a reasonable effort and well done and is especially worth while in that the usual conventional bag of therapeutic tricks: rest, diet, hydrotherapy, electrotherapy, etc., are put in their proper place; the hobgoblins of "heredity," "overstrain" and similar meaningless phrases are also better evaluated. On the whole a readable little book with theological leanings.

Frank, Ludwig. VOM LIEBES- UND SEXUALLEBEN. [2 Vols. George Thieme, Verlag, Leipzig.]

This two-volume octavo work deals with the experiences of a neuropsychiatrist of Zürich in matters medical, juristic and pedagogic. As the directing physician of a well regarded sanitarium just outside of this city the author has had an unusual opportunity for observation and for therapeutic effort.

As he well states in his Vorwort, daily experience shows how little the physician and lay person are informed concerning those ills which go by the general term of "nervous." Many people are suffering from such maladies and go about throughout life unknown and misunderstood. This fact accounts for the motivation of this work. It is therefore written in a semipopular vein and deals with

a large number of topics. As the author of a more technical work upon the "Disturbances of the Affective Life and Their Treatment" he has borrowed much from this work and rendered many of its problems into simpler language.

Thus the work is written as a series of letters, or essays, first dealing with children. How shall a young man be instructed regarding his erotic feelings? When should sexual matters be explained to children, and how? What about precociously erotic children? Cases of early masturbation: six-year-old, seven-year-old, ten-year-old boys, etc. Instances of anomalies are given and discussed. Young kleptomaniacs, anxiety hysteria mothers, neurotic fathers. Early erotic manifestations in girls: seven years, ten years, fourteen years, the menstrual epoch—these are also discussed. There are scores of cases brought up and quickly outlined, not in case history form but colloquially.

In a second chapter the problems of the love life of adolescents and youths are discussed in the same intimate manner. Here are no hypothetical states but actual case notes, but more interestingly portrayed.

Volume 2 deals with marital disharmonies and the sexual problems of advancing years. A large number of situations are reviewed. An intensely practical and thorough work built upon exact observation, a sympathetic understanding and an insight into the complex mechanisms of the reproductive instinct.

Crile, George W. A BIPOLAR THEORY OF LIVING PROCESSES.
[The Macmillan Company, New York.]

This work would offer a formula for life. The author calls it a theory, a bipolar theory. He would reduce all energy phenomena into terms borrowed from the electrophysicist and utilizing the cellular conception converts each cell into an electric unit of which the nucleus constitutes the positive, the cytoplasm the negative element. Here is the bipolar theory in its naïve form. Furthermore other bipolar, i.e., positive and negative aggregates seem to exist. Thus brain and liver are respectively positive and negative. The evidence for this is rather naïve. Remove the liver and the brain loses its potential—there you have it. The negative pole collects waste products, hence it must be the liver. The kidneys are not mentioned; nor the colon. The latter ought to be terribly negative but the author appears to be above the mention of the colon in this connection.

A large number of interesting observations and inferences are collected regarding phenomena which have been interpreted in the electrical jargon of the new century. Possibly not a whit better than earlier mechanistic jargons, and unquestionably doomed to pass in future centuries. Yet for the present they suffice, if one knows they are jargons. This the author apparently does not glimpse. Realities, theories, hypotheses, fictions, speculations, fancies, superstitions, delusions are interwoven into the loose fabric of this interesting and strange book of contradictions and assertions. There are 221 pages

in the book proper with a nearly equal number of pages of Appendices, some of which bristle with mathematical formulae and are contributed by Hugo Fricke. They deal with the mathematics of biophysical phenomena. It all seems like a very learned book, but fresh from the reading of Lange's celebrated work upon the "History of Materialism" we have our reservations.

v. Skramlik, Emil. HANDBUCH DER PHYSIOLOGIE DER NIEDEREN SINNE. I Band. DIE PHYSIOLOGIE DES GERUCHS- UND GESCHMACKSSINNES. [Verlag v. Georg Thieme, Leipzig.]

A thoroughly imposing volume which is to be a forerunner of two others, the three constituting a modern up to date "Handbook" of the lower senses, as the author groups them, i.e., Smell and Taste, here discussed; Pressure, Temperature, and Pain being those to be dealt with in vols. II and III.

Nowhere but in Germany could such works be produced or, at least, have such works been written and printed. Here are over 500 pages devoted to smell and taste alone.

The first real monograph upon smell appeared in 1895. It was written by Zwaardemaker, who has continued to contribute almost exclusively in this field. When it is recalled that the Rhinencephalon was the only encephalon in the lowly vertebrates and only began to relinquish its supremacy to optic, auditory and arm tactile encephalic structures with the primates, it may be seen that smell and taste must still play an enormous rôle in man's life, even if mostly unconscious. Again when one notes the conscious performances of the wine taster, the tobacco expert, the perfume manufacturer, etc., it is readily conceivable that there is something there in the old rhinencephalon that is capable of great utilization, and as the histopathologist follows the work of Alzheimer in his studies upon Ammon's horn sclerosis in the epileptic, the thought is nonsuppressable that possibly smell and the affect life have a connection as yet entirely unstudied save by a few litterateurs such as Flaubert or Verlaine, and a few of the psychoanalytic school.

Judging from Zwaardemaker's original, Henning's more recent, and this the latest monograph upon smell, it is evidently thought worth while to go into it deeply, since undoubtedly such a structural phylaxis is not without significance in physiopathology.

Without going further into the details of this very interesting work, which deals with every aspect of these two receptor organs, let it be said that it is a thoroughly commendable piece of work and gives us a reference book of great value. It is a great pity that important works of this kind are not available in English. When mankind grows up and stops its childish, silly chasing around the North Pole, translations of such classics will be considered of some value, especially when it may be hazarded, or even boldly stated, that at least one half of the hayfever sufferers of the world have smell associations of unconscious nature and some day will be cured when more people grow up and care more for health than for tabloid newspaper exploitation of moronic "stunts."

Mayo, Charles H., and Plummer, Henry W. THE THYROID GLAND. [Beaumont Foundation Annual Lecture Course IV. C. V. Mosby Company, St. Louis. \$1.75.]

This small monograph of 83 pages contains, in Part I, a general outline of the structure of the gland, chemical as well as anatomical, some notes on the distribution of goiter and some information upon the metabolism. This is written by C. H. Mayo. The second part deals with the function of the thyroid in health and disease. It is preëminently a surgical dissertation and contains no new matter.

Czerny, Ad. DER ARZT ALS ERZIEHER DES KINDES. Siebente Auflage. [Franz Deuticke, Leipzig and Vienna.]

In 106 small octavo pages these seven chapters deal popularly with the idea of the physician as a trainer of the child and with the values of such a type of bringing up. If all physicians were as wise as the author and capable of growth with the advance in medicine the program seems desirable but where will one find a corporate body of fairly firm hygienic principles even among physicians? Every day experience shows them to harbor medical follies and foibles and who among us can say that our own children are so superior as to demonstrate the author's thesis? Practically every surviving medical superstition was once taught by the "best faculties" of Alexandria or Athens, or Rome, or Bologna, Paris, London, Berlin or New York.

Baerwald, R. ZEITSCHRIFT FÜR KRITISCHEN OKKULTISMUS. [Vol. I, No. 1. Verlag von Ferdinand Enke, Stuttgart.]

The present new magazine offers itself in a somewhat different spirit from others dealing in the same field. These have had a propaganda aspect; this the editor says is to be a critical journal—neither pro nor con but receptive to all serious work in the field.

The first number contains articles by Dessoir on Telepathic Vision; Bohn on The History of Rapport; Darmstaedter on Alchemy; Tischner upon Methodology in Occultism; Hofmann on the Mechanism of the Od Rays; v. Klinckowstroem on Mediumistics, and Hellwig on Psychological Glosses to the Berlin Occulticprocess.

This number also indicates there will be critical abstracts of the literature, book reviews, etc., etc. The numbers are to appear quarterly, 80 pages each, and the cost will be 20 mks.

Valière-Vialeix, V. OPTIC DISTURBANCES IN EPIDEMIC ENCEPHALITIS. [Thèse de Paris, 1925.]

An excellent review of general ocular sensory disturbances in acute encephalitis with special emphasis laid upon epidemic encephalitis. Special attention is given to disturbances of the optical pathways. Ten patients dying from encephalitis are carefully studied as to the cerebral anatomy by careful serial sections made in the Foundation Dejerine. The monograph is richly illustrated and too detailed to be abstracted here. It is a very creditable piece of work.

Mahaim, Ivan. HEPATO-LENTICULAR DEGENERATION. [Thèse de Lausanne.]

This study consists of an anatomoclinical and an experimental part. In the first and third chapters the author gives us an historical-critical review of Wilson's Disease, Westphal-Strümpell's Pseudo-Sclerosis and Torsion Spasm, three syndromes which Hall has brought under a common head of "Hepato-Lenticular Degeneration." Certain authors have made efforts to dismember this unity and would show pseudoscleroses without cirrhosis and post-encephalic syndromes analogous to Wilson's Disease and to Torsion Spasm. Mahaim elects to follow Hall and synthesize the syndromes in that a common factor, hepatic cirrhosis and elective or predominant affection of the central gray nuclei characterizes all three.

In a second chapter the author gives the description of a new case with histological examination. Clinically it comported to a type intermediary to Wilson's Disease and Torsion Spasm with athetosis thrown in. The tremor was slight but hypertonia was marked and showed paroxysmal exacerbations. On autopsy there was advanced atrophic cirrhosis of the liver, and elective necroses of the globus pallidus on both sides, with double sided hemorrhagic lesions in the putamen which appeared atrophied. Discrete cortical alterations with slight neuroglia proliferations.

The pathogeny is discussed in the fourth chapter with experimental work upon dogs. Biliary fistulae were made in order to permit toxic action of ethyl alcohol. This produced primary lesions in the liver cells. Then the problem arose would elective lesions be induced in the brain and in the central nuclei. The liver poisoning should be primary and chronic, hence his particular method of poisoning.

Of seven animals experimented with two lived long enough to demonstrate generalized ganglion cell degeneration of the brain. So far as the striatum and thalamus were concerned he found vascular and associated neuroglia changes. He holds these to be elective but are present only when the liver lesion has had a slow progressive evolution. He thus thinks it highly probable that in hepatolenticular affections the liver is primarily affected, the lenticular region secondarily thus following the older conceptions of toxins as laid down by Wilson, and followed by his fellow countryman Hall.

NOTES AND NEWS

Revue Francaise de Psychanalyse. This is a new journal to be devoted to psychoanalysis edited by French and Swiss neuro-psychiaters and the organ of the newly established Paris Psycho-analytic Society. The editorial board consists of Hesnard, Laforgue, Odier, R. de Saussure and Pichon. Gaston Doin et Cie, 8 Place de L'Odeon, Paris, are the publishers. It is to be a quarterly. The price for foreign countries varies from 100 to 120 francs, according to the distance zone.

The "Acta Psychiatrica et Neurologica." This new journal has been founded by a group of psychiatrists and neurologists in Denmark, Finland, the Netherlands, Norway and Sweden. The editor in charge is Dr. K. Krabbe, Osterbrogade 21, Copenhagen.

We regret to have to announce the death of Dr. Henry M. Hurd of Baltimore, who died July 19, 1927, at the age of eighty-four. Obituary notice will appear later.

Just before going to press we learn of the death of Vincenzo Gilberti of New York, a young and promising neurologist.

N. B.—All business communications should be made to Journal of Nervous and Mental Disease, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

The Journal

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Nervous and Mental Disease

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ORIGINAL ARTICLES

FAMILIAR FORM OF ENCEPHALITIS PERIAXIALIS DIFFUSA

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Since the first description by Schilder (1912) of a case of encephalitis periaxialis diffusa, not very many cases have been recorded in the literature. According to J. Collier and G. Greenfield at the time of their paper, only 24 cases were reported as corresponding with Schilder's description. To these cases we must now add the case of Mihalescu and Elekes (1924), the case of Flatau (1925), the case of Brock, Carroll and Stevenson (1926), the case of Kraus and Weil reported at the New York Neurological Society (1926), the case of Foix et al. (1926) and the very recent case of Barré, Morin Reys and Draganesco.

From the clinical point of view, the bald clinical aspect divested of minute details is reported as follows by Collier and Greenfield: A malady usually occurring in children and young subjects with no tangible factors or antecedents. The onset is a few days, the course progressive with some remissions to a fatal issue, the duration from a few months to three years. The chief early sign is cerebral blindness which becomes complete, to which is added mental reduction and increasing spastic paralysis, unsteadiness from parietal involvement and deafness from temporal involvement may be conspicuous. Dementia increases and passes into coma which terminates the illness. The condition, usually bilateral, may commence on one side or may be confined to one side.

The simplicity of the clinical picture as claimed by the two mentioned authors is not accepted by others and Bauman, who has paid

special attention to the clinical side of the disease, states with right that the review of the clinical manifestations shows that the symptoms are so variable that it is even impossible to discover an approximate unity in the diversity. A glance at the different localizations of the process is quite sufficient to show that we pass the limits of diagnostic possibility in this very characteristic structural disease. Even the blindness which was supposed to be one of the main characters of the disease was found absent in some instances and the three cases I will report were all exempt from it.

The clinical features arranged in tabular form by Bauman point out that general symptoms, such as headache, vomiting, incontinence and fatigue were found in the majority of cases though in some the absence of general symptoms is mentioned. The mind was usually affected, which is not surprising in such a diffuse process. Apathy is most frequently recorded but disorientation, forgetfulness, euphoria, crying and screaming are also included. In a few instances, however, mental condition had not suffered. Walking was often impossible even in the early stages (one fifth of the cases) or the gait was stumbling and unsteady. Tonic and clonic convulsions occurred in some of the cases. The pupils were slightly sluggish to light in four instances. The disturbance of ocular muscles was found in a little less than half of the cases, usually in the form of strabismus, diplopia, disturbance of the conjugate movement and in one patient, ptosis. Hemianopsia occurred in 5 cases. In some patients hardly any vision remained, and in Stauffenberg's case sudden aphasia occurred. Sometimes there was anarthria or echolalia; occasionally traces of apraxia. Intention tremor was at times recorded.

The pathological picture summarized by Collier and Greenfield is that of a massive affection of the white matter of the cerebral hemisphere, considered to be toxic in origin and inflammatory in nature and characterized by the disappearance of the myelin, the axis cylinders remaining for a long time intact, though these cylinders eventually perish, with comparatively little lymphocyte exudation and very conspicuous glia reaction. This affection commencing bilaterally in the white matter of the occipital lobe spreads forward through the white centers by contiguity. It spares the cortical gray matter and subsulcine arcuate fibers and the basal ganglia, either completely or for a very long time. It advances throughout the central white matter to the capsules, crura and pons. It affects last of all the white matter of the frontal and temporal poles and accord-

ing to the stage of the disease at which death occurs these regions may be either completely spared or affected to some extent.

However, though the lesion of encephalitis periaxialis usually commences in the posterior region of the hemisphere and spreads forward thence, yet it may in fact take origin in any part of the white matter and extend sometimes narrowly and slowly, sometimes widely and quickly. In the case of Jakob, of Walter and of Kaltenbach the lesions were frontal in origin. In those of Rossolimo and Marie-Foix they were central in commencement. In the case of Siemmerling and Creutzfeldt they began in the temporal region and extended into the central regions. In the case of Henneberg it obviously started in the parietal region and extended to the central regions and along the capsule to below the thalamic level. Some cases show that the white center of the cerebellum may be affected in exactly similar fashion. Most of the cases were found in the very early age but since the first description of this special disease, other cases have been reported in which the disease developed in a later period—twenty, twenty-five, thirty, and even forty years of age (Redlich-Walter). The question of age does not seem to corroborate Collier's statement that the disease usually occurs in children and young subjects.

As far as heredity is concerned, no signs of heredity nor familiarity. This point is quite important as it shows that other authors have never encountered familial cases which fact renders more interesting the report of the familial occurrence of this infrequent disease. I must however recall that Krabbe in 1916 described a familial infantile form of diffuse brain sclerosis which he separated from the Schilder's disease precisely on account of the familiarity, the early appearance of the disease in childhood and the absence of inflammatory changes. The pathological anatomical findings in Krabbe's cases were: a marked hardness of the white substance of the brain without alteration of its shape; intactness of the cortex and basal ganglia; destruction of the medullary sheaths and axis cylinders throughout the white substance of the cerebrum (a 2mm. layer however was preserved immediately under the cortex); complete degeneration of the white matter of the cerebellum and degeneration of the spinal nerve tracts. The destroyed tissue was replaced by dense fibrillar glia in which a considerable number of variously shaped glia cells were seen, mostly protoplasmic. The vessel sheaths were infiltrated with fatty granule cells and other apparently gliogenous scavenger cells. There was a total want of new formation of vessels or infiltration of their sheaths with leucocytes or lymphocytes.

I will later on discuss the analogy of Krabbe's case with the Schilder's form of diffuse sclerosis. The report of my cases will show indeed that the autonomy claimed by Krabbe for his infantile familial form is no more tenable due to the fact that the disease may appear under the familial form even in the adult period of life. Scholz has described familial cases which he differentiates from the Schilder's form. It does not seem to me that his differentiation is valid. His pathological picture does not differ from Schilder's. The axis-cylinders are not better preserved than in other cases of multiple or diffuse sclerosis and the perivascular infiltration is now considered the expression of a symptomatic inflammation the same as Scholz believes is the case in the diffuse sclerosis which he describes.

The disease has been differently denominated according to the various authors. Schilder proposed the name of encephalitis periaxialis diffusa which he separated from the large category of diffuse brain sclerosis. Marburg however had already suggested for the multiple sclerosis an almost similar name: "encephalomyelitis periaxialis scleroticans" although the qualification of "diffusa" given by Schilder implies a more marked extension in contrast with the circumscribed lesions of multiple sclerosis. It indicates also the preservation of the axones. I will show later, how this particular feature is no more characteristic in encephalitis periaxialis as it is no more in multiple sclerosis. In 1914 Pierre Marie and Foix, suggested for the case they described, the name of "symmetric intracerebral centro-lobar sclerosis." The histological lesions were undoubtedly of the same type as those described by Schilder and even the integrity of the *fibrae arcuatae subcorticalis* was reported by them. The demyelination was more or less complete. In 1924 Bauman proposed for this disease the denomination of "sclerosing encephalitis of the white matter of the hemispheres" although he was aware that the term "encephalitis" appeared restrictive since there are cases in which one can speak more correctly of a purely degenerative process than of encephalitis. Flatau in 1925, because of the absence of inflammatory signs in the case he reported suggested calling the disease "progressive sclerotic encephaloleucopathia."

Quite recently Globus in the discussion following the paper of Kraus and Weil opposed the name of Schilder's disease and proposed the name of "diffuse sub-cortical encephalopathia."

Very recently Ch. Foix has attempted to divide the encephalitis periaxialis of Schilder which he considers the acute stage of the disease from the chronic type which he called "sclerose centrolobaire." This second form is no longer evolutionary conversely to

the periaxialis form which is progressive in type. He suggests, for the Schilder's type the name of "sub-acute centro-lobar sclerosis."

My paper deals with three cases of encephalitis periaxialis diffusa, the brain and cord of one of which was sent for study at the Institute through the courtesy of Dr. King of the Central Islip Hospital. For the second one I am indebted to Dr. Sanford, pathologist at the Manhattan State Hospital who has allowed me the study of his material. For the third case I am indebted to the Superintendent of the Westborough State Hospital (Massachusetts) who kindly sent to the Institute some slides of the cortex and spinal cord of the case. Unfortunately, the gross material having been lost in an accident of the laboratory, I have not been able to study the topography of the lesions in this last case.

The interest of my presentation lies chiefly in the fact that the three cases reported in my paper were brothers and sister and constituted the only children of the family. The first brother, Ch. J., was admitted to Westborough State Hospital on May 23, 1906, at the age of twenty-one and died on October 26, 1916, at the age of thirty-one. The second brother, Ra. J., was admitted to the Manhattan State Hospital at the age of thirty and died on March 30, 1924, at the age of thirty-five. The sister, R. J., was admitted to Central Islip Hospital May 3, 1919, at the age of twenty-six and died February 23, 1925, at the age of thirty-two.

In the woman the disease became manifest at the age of twenty, following a severe burn. In the oldest brother the clinical manifestations started at the age of twenty-one, following a trauma, and in the second brother the first symptom appeared at about thirty.

The clinical diagnosis made "in vitam" in all the three cases was that of multiple sclerosis. The clinical notes are summarized for each one of the patients and many similarities in the clinical course may easily be noticed.

Report of the cases: Case I. R. J., a woman, admitted to Bellevue Hospital April 28, 1919. Age twenty-six. Single. Height, 4 ft. 8 inch. Weight, 97 lbs. Walked to hospital with father. Acting queerly for six years following a severe burn; thinks someone has cast a spell over her; refuses to wash or bathe herself or comb her hair; forgetful, leaves change on counter; talks in her sleep and to herself; is a spiritualist. At Bellevue somewhat intellectually and emotionally deteriorated. Delusions of moderately grandiose type, "a medium, very pretty, good chance to marry a millionaire." In poor physical condition. Knee-jerks very active; pupils dilated, rather irregular, sluggish to light, especially right. Decided Romberg. Tremor of facial muscles and fingers. Speech ataxic. Gait shuffling. From Bellevue Hospital the patient was sent to Central Islip Hospital, May 3, 1919.

Anamnesis: Parents separated. Two brothers, "multiple sclerosis." Maternal grandmother insane; maternal cousin feeble-minded. Patient backward in school but social life normal; rode a bicycle and went to dances. In 1912 severely burned by explosion of stove blacking containing gasoline; treated in hospital for four weeks; nervous system never quite recovered. Had an accident while coasting. Studied telegraphy six months in 1914 but was too nervous to keep it up. Too nervous for other occupations. In 1915 worked in munition factory for eight dollars a week, gave it up after a year because her arms ached and she was getting too nervous. It seemed to her as if the floor would go rapidly up and down, but she was not yet lame and could dance. Worked for a short time as saleswoman until her mother died in January, 1917. Then her nerves gave out; went to live with an aunt, who found her irresponsible and unbalanced, extremely stubborn; she was unsteady in her gait, would blunder and fall down. After a few weeks patient was sent to her father in New York; at Vanderbilt Clinic two Wassermanns of blood and one of spinal fluid were negative.

Physical examination: Scar right forearm from burn. Lungs and heart normal. Pulse regular, strong, 72, good volume. Arteries elastic. Digestive system normal. Pupils dilated, regular, equal; fairly prompt to light. Knee-jerks exaggerated; ankle clonus; abdominal present; plantar normal. Grips strong. Gait ataxic. Romberg present. Tremor of tongue, face, fingers. Test words show sticking and slurring at times. No muscle tenderness. Right sided weakness and lack of coördination. Urine, 1012, faint trace albumen.

Summary at Central Islip, May, 1920: Mentally: A woman of twenty-seven, who for about eight years has shown progressive neurological disorder with mild deterioration, euphoric mood, impaired judgment and concentration, poor correlation of remote time, but a clear sensorium. Mild paranoid trend based on actual facts, but no delusions otherwise and no hallucinations. Physically: Progressive spastic ataxia, especially of legs, of varying degree; intention tremor; bi-temporal optic atrophy; absent abdominal reflexes; poor control of sphincters at times. Deep reflexes exaggerated; ankle clonus. No Babinski sign, no sensory disturbance, no speech defect, no nystagmus. Mild leucocytosis of spinal fluid. Wassermann on blood and spinal fluid repeatedly negative. Diagnosis: Multiple sclerosis.

On admission patient was well nourished with fresh color and quite good looking except for some hypertrichosis. In January, 1923, her nutrition and color were still fairly good, but a year later she had lost some weight, and from then on became more and more emaciated. In January, 1920, she had diphtheria, and in February, 1920, influenza. From October, 1924, she had bowel disturbance, constipation or diarrhea, sometimes with temperature. The neurological symptoms progressively increased from time of admission. In January, 1925, she was anemic

and weak, and had quite severe bedsores. Speech was monotonous and sing-song. There were involuntary grimaces and distortions of facial muscles. Intention tremor very marked. No nystagmus. She died at 1 A.M., February 23, 1925. Cause of death: Multiple sclerosis. Acute enteritis. Autopsy at 1:30 P.M., same day, by Dr. King:

Body of a much emaciated white woman of thirty-two years. Legs contracted. Rigidity and lividity present and slight blue discoloration of abdomen. Extensive sloughing and decubitus both hips, and blisters on heels; sores on front of legs. Hair brown; eyes brown; right pupil $\frac{3}{4}$ wide, left $\frac{1}{2}$ wide. Orifices normal. Scalp normal. Calvarium dense, diploe deficient in places. Dura thick and opaque and very firmly adherent to skull-cap. Pia edematous, hazy, some subarachnoid blood staining; pia tough and adheres firmly to convolutions. Considerable excess of cerebral fluid. Basal vessels in good condition. No granulations. Brain, 1,002 grams, pale, shows atrophy of convexity. Pituitary normal. Body section shows scanty pigmented subcutaneous fat. Muscles thin, pale. Cartilages not calcified. Breasts normal. Great omentum little fat, adherent by tag to gall bladder. Mesentery moderate fat. Mesenteric glands prominent, moderately enlarged, one is calcified; retroperitoneal glands also somewhat large. Caecum long, lies in pelvis; appendix normal. A little reddish free fluid in pelvis. Heart area small. Pericardium has a little fluid. Epicardium hazy, little fat. Some blood and dark clot escape from heart on removal and a little dark clot is left in auricles. Heart, 134 grams, in systole. Mitral orifice admits one finger tip easily, tricuspid three. Foramen ovale closed. Valves all normal. Endocardium hazy. Muscle pale but fairly firm. Coronaries and aorta normal. Pleural cavities moist, free from adhesions. Left lung, 175 grams, right 173 grams, normal except for a little posterior congestion. Bronchi a little congested and with slight mucoid exudate. Bronchial glands not enlarged. Spleen, 56 grams, capsule smooth. On section red in color, markings distinct, consistence firm. Liver, 928 grams, capsule smooth. On section somewhat bloody, markings only moderately distinct, general color reddish brown. Consistence fairly firm. Gall bladder has a little pale bile; duct patent. Pancreas of good size, firm, normal in appearance. Stomach mucosa normal except for congestion of cardiac end. Intestinal mucosa unevenly, in places deeply, congested; in large intestine descending part shows deepest congestion; there are no ulcers. Adrenals firm, markings distinct, centers dark. Kidneys, left 109 grams, right 79 grams, capsule peels without much difficulty and leaves a smooth surface. On section cortex appears thick and relatively pale though whole organ is congested; markings distinct; consistence fairly firm. Left ureter normal; right a little distended though bladder is empty. Bladder mucosa normal. Internal genitals normal, no adhesions.

Pathological summary: Acute enteritis. Chronic nephritis. Atrophy of the brain.



FIG. 1. Frontal section of the brain of Case No. I, at the level of the anterior pole of the temporal lobe.

FIG. 2. Frontal section of the brain of Case No. I at the level of the anterior portion of the striate body.

Description of the brain, made at the institute: The brain is of small size. The leptomeninges of the convexity appear normally thick. Apparently no exudate is detected. Convolutions are atrophied all over the convexity but there is no appreciable widening of the sulci. Blood vessels of the convexity appear normally injected. There is no appearance of new blood vessel formation. At the base there is slight thickening of the pia meninges, especially in the vicinity of the pars perforata posterior. The blood vessels are very narrow but do not show pathological thickening. The optic nerves are somewhat small. The entire brain is firm in consistency and does not reveal external focal lesions.

On section, the cortex of the frontal region appears narrow and the white substance has a peculiar whitish gray aspect with many grayish pink points throughout its extension. This aspect is symmetrical on both sides and respects the bordering area between the cortex and white substance, area which grossly corresponds to the arcuate fibers. The consistency of the white matter in the involved regions is slightly increased with occasionally a slight tendency to bulge. The peculiar aspect of the white matter is seen starting from the frontal poles. The whole frontal lobes, both sides, show the same particular lesion which becomes more pronounced at the level of the anterior horn of the lateral ventricles (Fig. 1). At this level the lesion is seen to invade the corpus callosum. At the level corresponding to 1.5 cm. behind the temporal poles, as seen in Fig. 2, the lesion invades the internal capsule as well as the upper portion of the head of the caudate nucleus. The lesion is here, too, symmetrical and grossly respects the temporal region. The corpus callosum is also involved by the lesion. One centimeter farther back the lesion is diffusely extended and quite evidently invades the internal capsule at the level of the putamen and pallidus. The region of the insula is affected, too, as well as the temporal convolutions. Farther back the lesions appear more pronounced. At the level of the parietal region they are apparently deeply extended into the internal capsule. The basal ganglia on the whole appear smaller than usual but no grossly appreciable sign of their involvement is seen at this level. The third ventricle is dilated. The temporal lobes are slightly affected, a little less on the left side. The hippocampus appears grossly free from lesions. The substantia nigra shows black spots intercalated by lighter grayish patches. At the level of the eminentia quadrigemina posterior the lesions are more pronounced than in the parietal region. The lateral ventricles are both dilated. The epiphysis appears slightly enlarged and very firm in consistency. The pons and tegmentum grossly do not show lesions. Farther back in the occipital region (Figs. 3 and 4), the involvement of the white matter is still very pronounced and extended. At the level of the pole of the posterior horn the peculiar aspect of the white substance is seen bordering the mentioned posterior horn of the lateral ventricle. At the occipital pole the intensity of the lesion seems to gradually diminish.

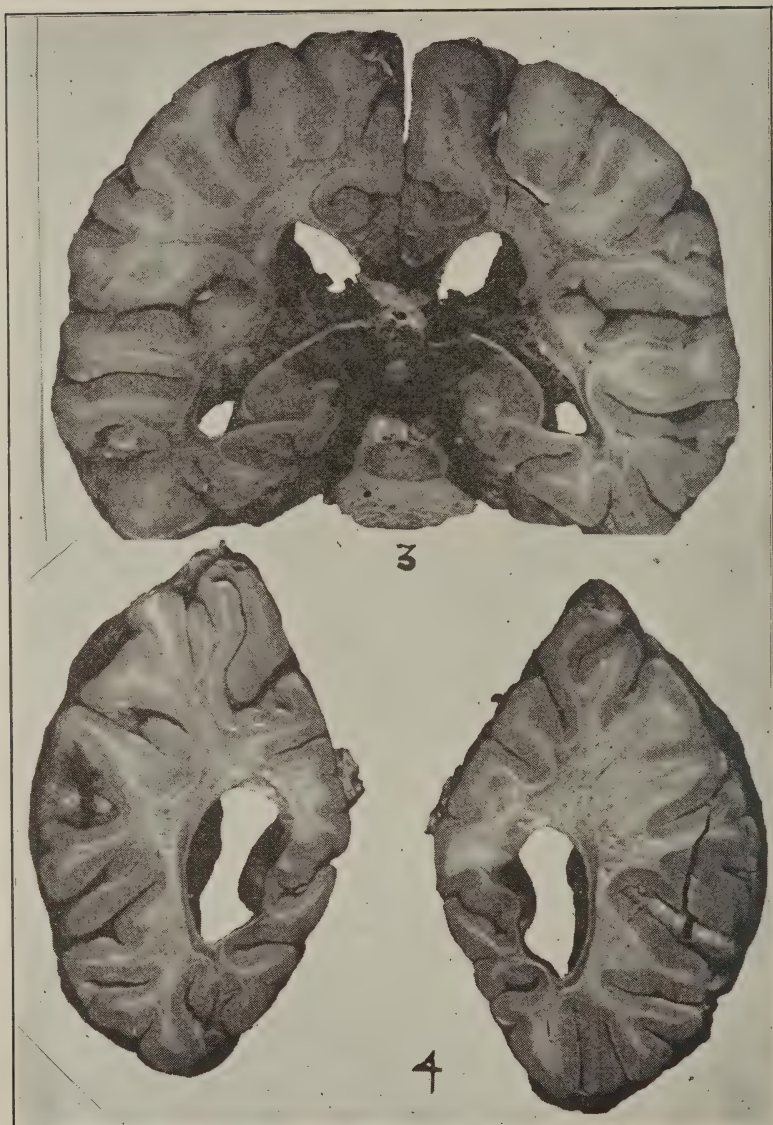


FIG. 3. Frontal section at the level of the corpus quadrigeminus posterior (Case No. I).

FIG. 4. Frontal section at the level of the occipital region (Case No. I).

The cerebellum shows changes which can be reported as of the same nature as those already described but of far less advanced intensity.

Spinal cord. The dura is somewhat thick. The organ is reduced in

volume and in the cervical and dorsal regions shows on both areas of the pyramidal tract a whitish gray appearance.

Case II. Ra. J., brother of R. J. Admitted in 1919. Anamnesis: Born in Gardner, Mass., thirty years ago. He was, apparently, of normal intelligence, had one year in high school, leaving at the age of nineteen, his slow progress being due to home conditions which kept him out of school a great deal. After leaving school he worked as a bellboy in a hotel, and later took up chiropody but did not like this work, gave it up and came to New York at the age of twenty-three. In New York he started to learn the plumbing trade but gave this up after a year or two because he thought the work was too heavy for him. After this he drifted from one position to another, never staying long in one place. He worked in various positions; most of the time was a hospital orderly, and he was described as having been indolent, lacking in energy and initiative, but good natured, generous, and easy going. He was drafted into the army in April, 1918, and for some time before this had been going about to various doctors for examination, thinking he had some form of venereal disease. None of the doctors who examined him, however, could find anything wrong with him. The patient could give no reason for this idea beyond the fact that he was not feeling well, that he felt tired, thought he might have contracted venereal disease from people in the hospital with whom he worked. He states he has never gone much with women and has never had any venereal infection, as far as he knows. He was sent to Camp Devins about July 1, 1918, and after being there only a few days he began to be lame; he felt nervous at this time, was sent to the psychopathic ward in the hospital and was discharged from the army as physically unfit on August 1, 1918.

He had already begun to develop a paranoid trend while in the camp; this seemed to have grown out of the fact that while there he had received a letter from the Red Cross saying that his wife wished to come down to live near the camp so that she would be near him. The patient has no wife and probably the letter was meant for someone else of the same name. He, however, developed an idea that it was part of a plot on the part of some woman to get hold of him and separate him from his bank roll.

After leaving the army he again worked as a hospital orderly; he now began to hear hissing noises in his ears and later actual voices which used to keep him awake at night. He heard people calling him chiropodist, people laughed at him on the street; he used to hear a woman's voice in the house where he lived saying she was in love with him. He never saw this woman but believed she was the one that claimed to be his wife when he was in the army. He also began at this time to have explosive outbursts of laughter.

He was admitted to Bellevue Hospital at his own request in Septem-

ber, 1919. On admission there claimed that he felt nervous, that he got very emotional, and that his memory was not as good as it used to be.

Physical examination showed pupils irregular but reacting to light and distance; no nystagmus. Bitemporal pallor of discs. Face had a washed out expression; no speech defect. All deep reflexes greatly but equally exaggerated. No Babinski sign. Ankle clonus and abdominal reflexes were absent. Left cremasteric absent; right sluggish. No ataxia or intention tremor. No spasticity of extremities—patient himself said that he used to stumble and lose his balance on dark nights.

His mental attitude is said to have been childish and indifferent; he laughed often in a silly manner, apparently in reaction to auditory hallucinations and when interviewed he expressed delusions of persecution with false perceptions of hearing into which he had no insight. Orientation and memory were intact.

On admission at M.S.H. the physical examination showed pupils somewhat irregular, but reaction to light was fairly prompt though diminished in extent; gaze rather unsteady when patient looked to extreme right or left, but no clearly marked nystagmus. Dr. Cohen, who examined the patient, states that the discs showed a bitemporal pallor and an unusual contraction of the arteries and veins typical of multiple sclerosis. Patient complained of a loud hissing in both ears which he said made it difficult for him to hear. As a matter of fact, actual tests showed that hearing was rather dull. Cremasteric and abdominal reflexes were quite difficult to elicit although not entirely absent on either side. Babinski sign was negative. Muscular strength was poor but equal on both sides. Left side of the face was slightly flatter than the right. Tongue deviated slightly to the left when protruded. Gait was unsteady, the feet occasionally scraping the floor when walking, especially the left. All muscular movements were clumsily performed although the sense of position was not lost. Romberg sign negative. The fingers, tongue, and lips were all fairly steady. Patient himself stated that formerly he had a marked trembling in his legs although this had almost entirely disappeared. There was no definite speech defect although patient spoke rather slowly and the syllables were very well separated.

Serological examination twice performed gave both times a negative Wassermann for blood and fluid, with globulin $++$. The first time one cell, second time five cells.

Mentally, the patient was dull and indifferent, spent most of his time idly on the ward, occasionally would engage in conversation and at such times it was seen that his mind was really quite clear and alert. His mood was fairly cheerful. He stated that he felt depressed at times but qualified this by saying that he felt cheerful even when he was sad. He laughed often in a silly manner, said that he was unable to control this tendency and frequently had to laugh even when he was not conscious of anything funny.

He still hears voices talking to him and he expresses a variety of absurd delusions. Memory is good for both remote and recent events. He is correctly oriented; has a fair grasp of general knowledge; seems to be rather childish, however, and judgment is poor. He realizes that he is physically ill, but shows no insight into his psychosis.

Serological examination: Blood shows negative Wassermann. Spinal fluid shows negative Wassermann; globulin, vegetative, one cell.

September, 1920: Patient presents the same cheerful attitude regarding his condition, thinks he is physically improved. He explains that he is now able to do work in the ward and does not fatigue as formerly. Claims gait is improved.

No ringing in the ears for the past three or four months and claims to have given up his suspicion and ideas of annoyance.

In regard to voices he heard he thinks they were real, not imaginary, that they were making love to him. He feels that he doesn't laugh as he used to, though several times during the interview he smiled and laughed when talking about the days of the week.

March 31, 1924: For the past three weeks it has been noticed that this patient has been gradually growing weaker. He was given stimulation by mouth every four hours. A week ago it was noticed that he had developed some dyspnea; temperature 101—. Examination revealed some rough breathing all over lungs; no definite rales could be ascertained; heart sounds extremely poor quality, but no murmurs heard. Stimulation was changed to hypodermically, every three hours. Three days ago he developed marked difficulty in swallowing, and examination of the chest revealed some scattered rales all over lungs, showing possibility of a broncho-pneumonia process developing. His difficulty in swallowing was so marked that he had to be given liquids every hour. He remained in this condition, failing to respond to stimulation, and finally, on March 30, 1924, at 6:15 P.M., he died. Cause of death: Multiple sclerosis: Broncho-pneumonia. Necropsy performed 10 A.M., March 31, 1924, by Dr. Sanford:

The subject is 153 cm. in height, with a weight of 85 lbs. In spite of this low weight he did not look especially emaciated and the body framework seemed fairly well developed. He did not look the age of thirty-four, having the appearance of being in the early twenties. Pupils unequal and very irregular. Beard and mustache thick and black. Hair of head thick and brown. Pubic hair was of the female type, although hair distribution otherwise was normal. Over the right trochanter and over the sacrum were deep infected ulcers. Heart, 203 grams. Was small but normal in proportion. Structure negative. Aorta was very small, barely admitting index finger. Walls normal. Lungs: the left lung showed broncho-pneumonia in lower portion of lower lobe. Air passages are small; otherwise lungs negative. Thymus: no remains of thymus found. Thyroid, 12 grams. Appeared normal in structure.

Abdominal organs: The stomach was much dilated and its walls thin. Openings negative. It contained considerable fluid nutriment with a sour odor. Large intestines much distended with gas. The sigmoid was twice the normal length and caliber. Liver weighed only 882 grams, but was



FIG. 5. Horizontal section of the brain of Case No. II at the level of genu and splenium corporis callosum.

normal aside from small size. Spleen was small, weighing only 55 grams. Structure negative. Pancreas: the same may be said of pancreas as of liver, and weighed 34 grams. Adrenals: right, 9 grams; left, 8 grams. Were broken down centrally. Kidneys appeared pale and swollen with a thickening of the cortex, and the cut surface pouted. Further abdominal

viscera negative. Testis weighed 15 grams; of normal density. Right contained a small nodule in lower part of epididymis.

Head examination: Scalp, bone of skull and dura mater normal. Pia mater thickened and rather milky, with dense adhesions to dura in places. Cerebral fluid very much increased, gushing out when the dura was incised. Pituitary was very small, weighing 0.22 grams. It appeared pinched, the clinoid processes being built up around it and were very dense. Intracranial blood vessels very small and had thin walls. Brain at time of autopsy weighed 1,062 grams. Convolutions were small. Sulci wide and deep. No granulations. The brain felt very hard to the touch. On incising it gave the appearance of a very extensive periaxilar encephalitis.

Further description of the brain made at the Institute: The brain has been cut in horizontal sections, the first section being the one corresponding to the "Pierre Marie coup d' élection" involving the genu and splenium of the corpus callosum. At this level, seen in Fig. 5, the white matter has a diffuse grayish appearance which is apparently more pronounced on the centrum ovale of the occipital lobe. In this region the special aspect of the white matter seems to respect a thin subcortical layer. The frontal lobes, and especially the left one, show a comparatively better preserved white substance, although the aspect of the centrum ovale is quite typical. The special lesions of the white matter spread in both the genu and the splenium of the corpus callosum. The basal ganglia grossly appear preserved, while the internal capsule, particularly the right one, is somewhat involved by the process. Fig. 6 shows a slight predominance of lesions on the left side. In the occipital pole of this same side the white substance seems even to bulge on the cut surface. The temporal lobes are also affected but the lesions appear here more central, respecting much more the convolutions. The Ammon's horn of both sides is also involved. The cortex of the insula shows only a slight involvement on the left.

In lower sections the lesions are still very distinct, especially on the left side, where it extends deeply into the frontal lobe, involving the lower part of the centrum ovale. The strata sagittalia surrounding the posterior horn of the lateral ventricles appear involved on both sides (Fig. 6). At this level the left putamen shows a slight discoloration of its caudal portion.

The basal surface of the hemispheres does not show any appreciable changes. The laterals and third ventricles are dilated. The substantia nigra does not show grossly changes, although on the left side it is somewhat paler.

The cerebellum, gross, does not appear involved.

Case III. Ch. J., brother of the two first cases, admitted to Westborough State Hospital, May 23, 1906, age twenty-one. Patient was born

in Champlain, New York, in 1884. He was a seven months baby, and the labor was quite difficult. He was anemic and frail, and was somewhat retarded, did not walk or talk until two years of age. At three he had bronchitis, which was followed by asthma, and later had pertussis

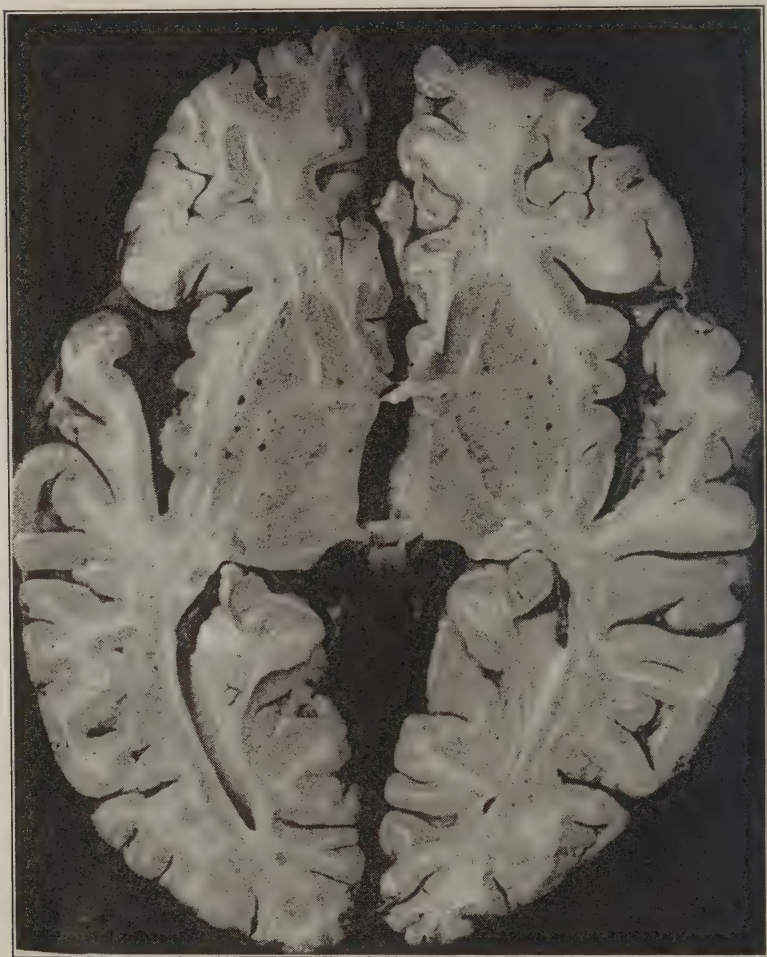


FIG. 6. Horizontal section of the brain of Case No. II at the level of commissura anterior.

and measles. He started school at the usual age and was able to learn easily, and is said to have had an excellent memory. Was considered a very good student. Finished one year in high school at sixteen years of age, when he was forced to quit because of family troubles. He is described as being very bright and cheerful, never depressed, and to have

a normal attitude toward the sexes. Somewhat quick-tempered, but truthful, with a good knowledge of the difference between right and wrong. He was somewhat religious. The father and mother separated when he was sixteen years of age, and the mother was given custody of the three children. At nineteen years of age he left home without his mother's knowledge and consent, in company with another boy. The mother made unsuccessful attempts to find him, but did not hear from him until two years later, when she received a letter from Trenton, New Jersey, stating that he wanted money to get home on. Afterwards it was determined that he had been drifting about the country working in various places without much progress. At the age of twenty-one years, while working in a rubber factory, while fooling with another boy he fell from a beam to a flagstone floor, a distance of 15 feet, landing on his back without striking his head. At first felt there were no ill effects from the fall. He was able to walk, and experienced very little pain. At the end of the week, however, he found difficulty in walking, his foot appeared to be paralyzed, and he had a staggering gait. He also became nervous and had spells of involuntary laughter. He was sent to a doctor in New York City, where he was to work in return for medical treatment. He did not improve, and was sent to another doctor who told him he had taken too much strychnine, and put him to bed, and then recommended an out-of-door-life.

Inasmuch as patient had become an invalid, it was impossible for his mother to care for him, and he was sent to the hospital where he was described as being somewhat hypochondriacal. His mind was centered upon involuntary emission on which he was inclined to place the blame of his illness. He laughed without cause and in an explosive manner. He told the admitting physician that when he concentrated his mind on anything, he would get to laughing. He complained of a weakness in his lower extremities and attributes this to the losses of semen while straining at stool. Said he was ambitious and would like to work, but he could not walk well.

The digestive, circulatory and respiratory systems were normal with the exception that there was a slight dullness and prolonged expiration over the apex of the right lung. Urinalysis was negative. The tendon reflexes were all greatly increased. Ankle clonus present on both sides. Babinski phenomenon was present on the right side. The superficial reflexes were absent. Station was good, but the finger to finger and finger to nose tests were badly performed. His gait was remarkable. The paces were short and most of the action seemed to be centered about the knee joint, rather than from the whole limb and the movements were stiff and awkward. Pupils were dilated and react to light and accommodation promptly. He was very unstable emotionally and seemed to be fluctuating between depression and exhilaration. On one or two occasions

he threatened suicide. He enjoyed the privileges of a parole, and there was no report of an infraction of the rules thereof.

One year after his admission, a note states that there was but little change in his condition, if anything the spells of silly laughter were becoming worse, and he complained of a weak feeling all over. A fine tremor was noticed about the lips and other muscles of the lower face, and there was a slight tremor of the upper and lower limbs upon attempted movement.

In 1908, two years after his admission, a note states there was but very little difference, with the exception that all his symptoms had been somewhat increased.

In 1909 the first trophic disorder appeared, an ulcer on the left anterior tibial surface. This yielded to treatment in about four weeks. In 1910 it is reported that his health was fairly good, and mentally he was in exactly the same condition as in previous years. Neurological examination: tongue protruded straight, slight tremor, pupils equal, react to light and accommodation. Knee jerks extremely active but equal. No clonus. Babinski phenomenon present on both sides. Abdominal and cremasteric reflexes absent. Much swaying in Romberg position. Toes turn inward. Gait spastic in type. Marked incoördination of the movements of lower extremities. A course tremor is present which becomes more marked when fine movements are attempted. Speech is jerky in character and might be termed "scanning." Uncontrollable outbursts of laughter is associated with the slightest excitation and is a strong contrast to his usual irritable manner. Ulcers appeared on his legs and did not yield to treatment.

In 1911 a note states that there has been no change from the previous year, with the exception that he has become more unsteady on his feet and occasionally fell while walking. Tremor of the intention type a pronounced feature. Speech very jerky. In 1912 he lost control of his bowels and bladder, becoming untidy. During that year his mental condition is described as one of euphoria and optimism. All neurological signs were much increased.

In 1913 there is said to have been some trophy of the right side, patient being right-handed the right grip was noticeably weaker than the left. Tap of patellar reflexes produced clonic movements, this was worse on the right side. Pupils react to light directly and consensually.

In May, 1914, he was discharged to his mother, who desired to take him home and care for him there. He remained out of the hospital about one year, when he returned. Upon his return he was paraplegic. Scanning speech. Intention tremor was the most marked feature. Ankle clonus was present on both feet as also was the Babinski phenomenon. All tendon reflexes markedly increased. Superficial reflexes absent. Pupillary reflexes normal. Spinal fluid examination, Wassermann test, negative. Gold reaction: negative. Nonne: negative. Urinalysis negative. Cell count 58 per cm. Wassermann reaction serum: negative.

He soon developed large bedsores and was very untidy. From the time of his second admission the disease progressed steadily and he became gradually weaker until the time of his death, October 26, 1916.

Summary of pathological report: Heart: chronic endocardial thickenings, aortitis. Lungs: no lesions. Larynx and Trachea: no lesions. Liver: congestion, focal glissonitis. Spleen: small, congestion. Stomach and Intestines: congestion of gastric mucosa, congestion of gut, chronic peritonitis. Pancreas: no lesions. Suprarenals: asymmetry, right larger than left. Urogenital Tract: rudimentary left kidney, parenchymatous nephritis of right, congestion of kidney pelvis (rt.). Bladder, Prostate and External Genitals: no lesions. Other lesions: chronic contractures of knee joints. Brain and Cord: Calvarium normal thickness, moderate chronic ext. pachymeningitis, pial congestion and edema with focal opacities, focal cerebral atrophies, puffiness and pallor of right optic disc, congestion and atrophy of spinal cord.

The main clinical features in the three cases as reported in the clinical histories may be summarized as follows:

<i>Case I</i>	<i>Case II</i>	<i>Case III</i>
Onset of the disease at the age of 20, following a severe burn.	Onset of the disease at the age of 28-29	Onset of the disease at the age of 20-21 following a trauma
Pupils unequal No nystagmus Bitemporal optic atrophy	Pupils unequal No nystagmus Bitemporal pallor	Pupils dilated Pallor of right optic disc
Tremors of tongue and muscles of face Intentional tremors	No tremors No tremors	Tremors of tongue and face Intentional tremors
	Spastic laugh	Spastic laugh
Scanning speech	Scanning speech	Scanning speech
Progressive spastic ataxia	Gait unsteady	Spastic paralysis
Exaggerated deep reflexes	Exaggerated deep reflexes	Exaggerated deep reflexes
No Babinski	No Babinski	Babinski bilateral
Superficial reflexes absent	Superficial reflexes sluggish	Superficial reflexes absent

<i>Case I</i>	<i>Case II</i>	<i>Case III</i>
Positive Romberg Poor control of sphincters	Negative Romberg	Positive Romberg Poor sphincter control
Mentally there was:	Emotionally unstable	Depressed, then
Euphoria	Poor judgment	Euphoric
Impaired judgment	Memory good	Irritable
Poor memory	Paranoid trend	Poor judgment
Mild paranoid trend	Auditory hallucina- tions	No hallucinations nor delusions

Histological Study

The pathological findings being fundamentally the same in my cases I thought better to summarize the main histological features of the disease and leave at the end the description of peculiarities concerning the different regions of the nervous system.

Myelin Sheaths: The white matter is the seat of a very pronounced and very diffuse demyelination, noticeable also to the naked eye. The demyelination is almost sharply limited to the central white matter and respects most of the *fibrae arcuatae*. These fibers appear grossly as being well preserved and they are quite sharply differentiated from the innermost portion of the white substance which appears very poorly stained by the hematoxylin. Fig. 7 is a comprehensive picture of the amount of the central demyelination and of the preservation of the arcuate fibers, in a severely damaged area. The demyelination of the white matter is not quite uniform and its occurrence not quite absolute as there are practically few regions where the myelin has really totally disappeared. Of course, in the most severely damaged areas the residual myelin sheaths are very few and more or less fragmented. Fig. 8 shows the myelin residuals of a severely damaged area. In less involved areas some sheaths are seen, long enough to cross the field although presenting more or less pronounced varicosities which at times impress to the sheath a "moniliform" aspect. Occasionally some of the blood vessels are surrounded by a crescent of myelin sheaths the character of which is quite normal. This somewhat important fact conflicts to a certain extent with the statement of some authors that the lesions are more severe around the blood vessels.

An important peculiarity seen in the myelin sheaths preparation (Spielmeyer method) is the presence of numerous globoid formations with a cell-like appearance and disseminated all along the *fibrae arcuatae* and the inner portions of the white matter. These bodies

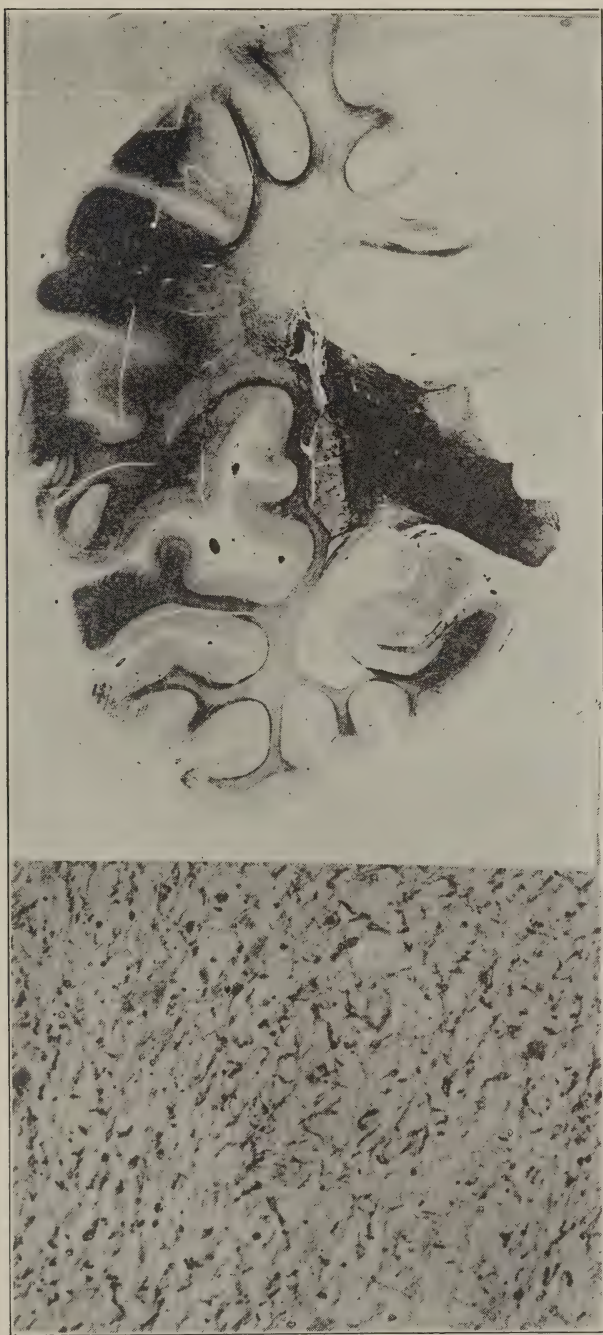


FIG. 7. Frontal section showing the diffusion of demyelination (Weigert method).

FIG. 8. Residual portions of myelin sheaths in an area of severe demyelination (Spielmeier method).

appear especially numerous along the above mentioned arcuate fibers and are seen either isolated or collected forming small or large clusters (Fig. 9). Very little amount of these bodies are seen in the central part of the white matter and practically none at all in the areas where the myelin destruction is highly advanced. These bodies have the same staining properties as the myelin sheaths and where

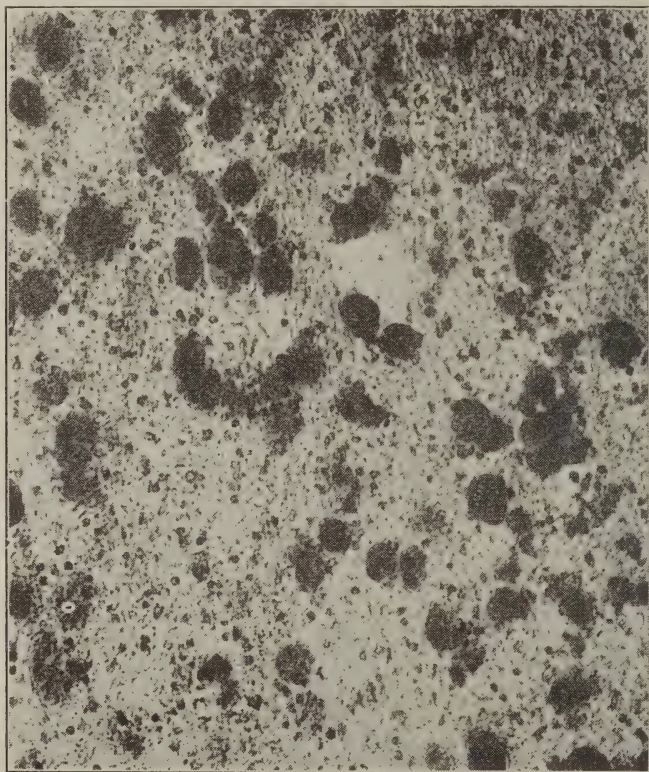


FIG. 9. Numerous globoid cells of neuroglia origin disseminated in an area of demyelination (Scharlach R stain).

these are still well preserved, the bodies usually appear deeply stained in blue. Occasionally their aspect is somewhat granular, though not constantly. In other regions where the myelin sheaths are mostly but not entirely destroyed these bodies appear although not constantly, somewhat paler and are much less numerous than in the peripheral zone (arcuate fibers and vicinity) (Fig. 10). The bodies' structure is not uniform as a few of them are coarsely granular, some others finely granular, while the majority appear homogeneous in structure.

A large number of these bodies have quite definite outlines and appear structurally as regular cells, the contours of which, generally well defined, are at times shadowed. I will call these cellular structures "globoid" cells, a denomination which has already been used by other authors. These globoid cells possess a nucleus which may occupy the peripheral or the central portion of the body. Some of the cells



FIG. 10. Area of demyelination with a few globoid cells filled with wasted material (Scharlach R method).

show two nuclei, very seldom more than two. The nuclei generally present quite definite regressive changes, the importance of which will later on be emphasized.

Besides the globoid cells numerous round structures are encountered, the morphology of which is quite similar to the globoid cells. These structures do not possess a nucleus and their analogy with the globoid cells is due to the fact that they are formed by material, the morphological staining and chemical properties of which

are similar to the material constituting the globoid cells body. These special bodies are seen free in the tissue, all over the section and especially where the myelin sheaths are still visible. They at times appear very small, at other times rather large, even larger than the globoid cells and they are more or less deeply stained, while at times they are barely visible and shadowed. Their origin from the breaking down of the myelin sheath is quite definite and is substantiated by a careful study of the transitory forms between myelin sheath formation and globoid bodies. I will call these bodies "myelin bodies."

Globoid cells and myelin bodies are seen quite numerous around the blood vessels and even in the perivascular spaces where they are seen isolated or collected in small or large amounts (Fig. 11). In the tissue immediately surrounding the blood vessels both the formations are quite numerous especially located between the nerve fibers and assuming various forms as if their shape was influenced by the surrounding structures. Some of the myelin bodies are shadowed and have to be carefully looked over. Cells and myelin bodies pour into the perivascular sheaths.

In the cortex, the radiate fibers appear still quite numerous although their number is somewhat reduced. The *fibrae infra radiatae* are quite diminished in number and the *fibrae supra radiatae* are almost entirely lacking, as is the case with the tangential fibers.

Nerve Fibers: (Bielschowsky Method). The nerve fibers show everywhere evident signs of involvement. In general the areas showing the highest damage of the myelin sheaths present also the highest lesions of the nerve fibers. The lesion of the axis cylinder leads in the most severe areas to its complete disintegration and disappearance. A relative disappearance of the axis cylinder is everywhere quite definite and it is not true to affirm that the process mostly respects the axis cylinders. These are everywhere affected. It is only a question of intensity which differentiates the various areas. Where the process is very highly intense there is a larger destruction of the nerve fibers although always a certain number of them are still detectable. Fig. 12 (which refers to the central white matter) shows plainly to what extent the axones are involved and what rarefaction of nerve fibers occurs. The residual axis cylinders often show characters of a more or less advanced degenerative phase. In some of the areas swelling and varicosities of the nerve fibers as well as end-swelling recalling the terminal *Bolas* of Cajal are seen. In the swollen areas loosened neurofibrils may be detected. In the areas where the myelin degeneration is mild, numerous axis cylinders appear yet to be normal

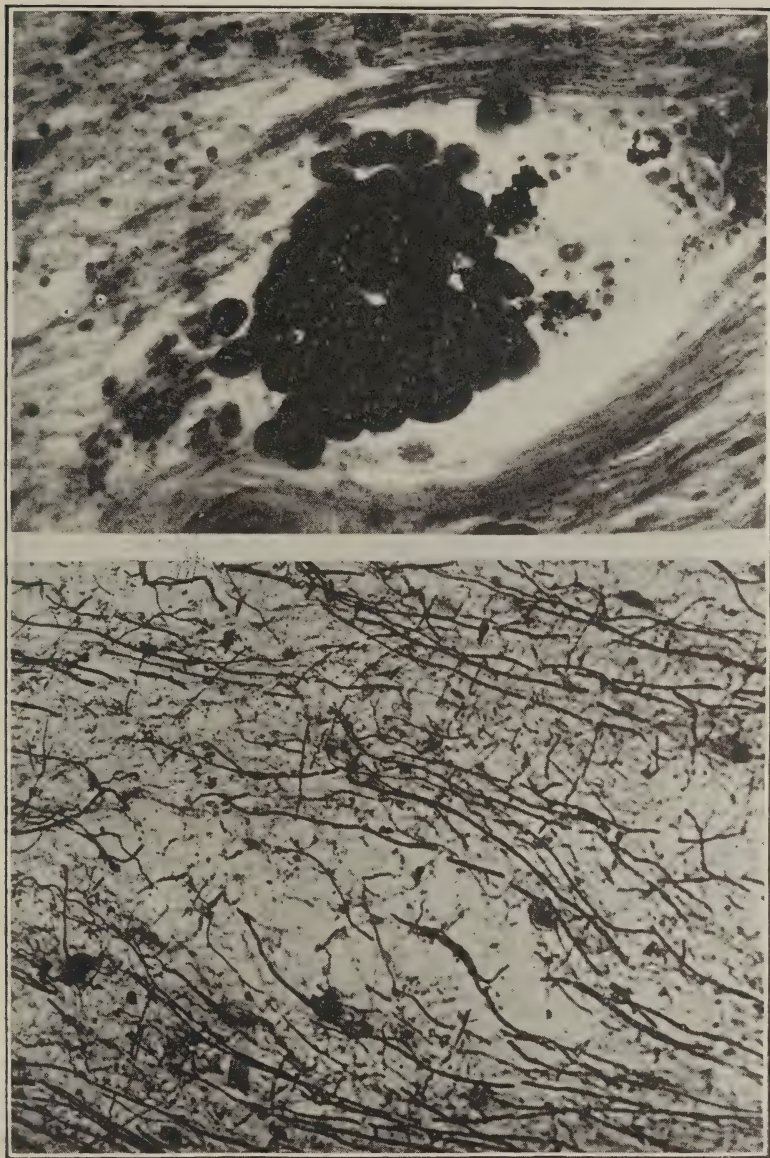


FIG. 11. Globoid cells in the perivascular spaces. At the right and left of the cells, Scharlach R material is seen brightly stained in red (Scharlach R method).

FIG. 12. Area of severe lesion of nerve fibers. The majority of the nerve fibers are disappeared (Bielschowsky method).

although swollen and fragmented fibers are scattered among the normal ones. Briefly, in no area of the white matter do the axones appear as numerous as in normal cases, the compactness of the fibers being far from normal. In the severely damaged areas the nerve fibers involvement is very marked, leading occasionally to a high destruction.

Neuroglia: In sections stained by the Holzer method for neuroglia the whole white matter appears to be the seat of a very diffuse gliosis. This process as the process of demyelination, is however, not uniform as the intensity of the gliosis varies from area to area. Fig. 13 distinctly documents the diffuse gliosis of the white matter. Along the arcuate fibers here and there regions are seen where the gliosis is more pronounced than in the central portion and the neuroglia fibers are seen assuming an arcuate direction parallel to the course of the myelinated fibers.

The gliosis is at times especially pronounced around the blood vessels where fibers crossing the perivascular spaces are also seen bridging the gap between the blood vessels and the glia membrana limitans. Some of the fibers appear thin while others are quite thick. Among the glia fibers are scattered many glia nuclei. These nuclei are of different shape and size, the large one being quite numerous and possess quite active characteristics. Here and there however, nuclei show definite regressive changes and are usually imbedded in a mostly unstained mass resembling the structure of the globoid cells.

By this method only occasionally the cytoplasm of glia cells is seen in the white matter, the glia fibers being mostly intersected around the nuclei. However, along the region of the arcuate fibers several neuroglia cells are seen possessing an enlarged body and quite pronounced prolongments; in some of the cells very close to the blood vessels quite enlarged sucker feet are also visualized. Generally speaking, where the neuroglia fibers are thick and numerous, only a few neuroglia cells are seen, whereas they appear quite distinctly and hypertrophic where the fibrous glia is less developed. A few of the above mentioned neuroglia cells are surprisingly large, of a type resembling the gemästete glia cells with a large nucleus and thick and enlarged prolongments.

(To be continued)

MEDULLARY AND PONTILE SYNDROMES.*

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Probably no other region of the nervous system offers such definite information as to localization of the site of injury or disease as does the pons and the medulla. It is the anatomico-physiological characteristics of the brain stem that determines the clinical character of the lesion and its symptomatology. Definite diagnostic criteria are readily available. These we deduce directly from our knowledge of the physiological function of the cranial nerve and the pyramidal and sensory pathways, which are in close proximity in this region. Disturbances of function in the area of origin of the cranial nerves from the oculomotor to the hypoglossal are the most important features of all affections of the brain stem and only by careful consideration of these signs, their method of appearance and their combinations, can we succeed in localizing correctly the pathological processes occurring therein. A brief review of the anatomy and the physiology of these motor and sensory fiber tracts and the origin and course of the cranial nuclei and their interrelationships is therefore in order.

THE MEDULLA OBLONGATA

A "prolongation of the spinal cord" (1) because of the many structures it has in common with the spinal cord, yet the medulla varies remarkably from it by the addition of centers for respiration, cardiac action and gastrointestinal activity. Probably the guiding influence in the localization of these centers in the medulla is the process of "encephalization"—the need which arose for the government of animal motion in order to better cope with the environment in securing sustenance. The significance of the medulla can be easily understood if one reviews the influences which have determined the formation of the head in the history of vertebrates. Direction of locomotion being originally determined by the location of the mouth—the source of food supply—it eventually determined the process of encephalization. This process expanded and added to itself organs whose purpose was more efficient guidance of locomotion.

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tion and with further specialization ultimately, in man, the cephalic extremity became the dominant center of control of all his activities. With the requirement for respiration we find the formation of encephalomeres—the original anlage which concerned themselves with the regulation of respiration in the medulla. Their functions are essentially splanchnic, differing from the myelomeres of the spinal cord whose functions are somatic. In accordance with the need for regulation of the aeration of the blood through the gill mechanism we find the encephalomeres in the medulla also controlling the activity of the heart and general circulation. With the change from gills to lungs and from water oxygenation to air breathing, we find in man the medulla having autonomous control over the vital systems of deglutition and gastrointestinal activity, respiration and cardiac action.

The arteries of the medulla are derived from the anterior spinal, the vertebral, the basilar and the posterior inferior cerebellar arteries. The medullary arteries are of two types—median and radicular vessels—the median artery runs through the ventromedian fissure to supply the central gray matter and adjacent nuclei and the radicular, which enters the medulla in connection with the nerve roots. The radicular artery immediately breaks up into two branches, the peripheral following the course of the nerve, and the central which makes its way towards various nuclei in the gray matter and to the fasciculi of the white substance. The median branches of the anterior spinal supply the nucleus of the hypoglossal nerve and the bulbar portion of the nucleus of the spinal accessory nerve. Radicular branches from the vertebral artery at their point of junction to form the basilar supply nuclei of the vagus, glosso-pharyngeus and both divisions of the acoustic nerve. Radicular branches of the basilar supply the nucleus facialis and the motor and sensory nuclei of the trigeminal. The lateral circumference of the medulla and the choroidal plexus are supplied from branches of the posterior inferior cerebellar arteries.

The most important of the fiber structures in the medulla are the pyramids which here decussate on the ventral surface, thus establishing by a comparatively recent accession, connection between the brain and spinal cord and contralateral control of each hemisphere of the brain over the muscles of the body. Six of the cranial nerves, the twelfth, the eleventh, the tenth, the ninth, the eighth and seventh, take their origin in the medulla. Eighty to 90 per cent of the pyramidal fibers decussate to form the crossed pyramidal tract. Those not crossing form the direct pyramidal tract or fasciculus of Türk.

The ventromedian fissure has on either side two elevations, the pyramids, heavy strands of fibers, pyramidal in shape, their bases on the bulbopontile sulcus and apices directed cephalad toward the pyramidal decussation. They represent important links in the pathway between the cerebral motor cortex and the spinal cord, conducting voluntary impulses from the brain to the body musculature. They are indices of the degree of voluntary control acquired over the movements of the body. On the lateral surface of the medulla the eminentia lateralis indicates the increased prominence of the dorsal spinal cerebellar tract as it ascends to form the inferior cerebellar peduncle. The eminentia trigeminus indicates the portion of the mass of nerve cells receiving impulses of the face and head. Included here is the descending tract of the spinal trigeminal which convey impulses from the Gasserian ganglion. The eminentia olivaris indicates the position of the inferior olive and is important because of its probable relation to the coördination of the head and eye movements. The restiform body is the continuation of the lateral eminence and is the main factor for impulses from the muscles to the cerebellum, constituting the afferent portion of the reflex arc which utilizes the cerebellum as its special center for the synergic control of muscular activity. The eminentia acoustica at the cephalic extremity of the lateral surface is the primary receiving center for the nerve fibers from the spiral ganglion in the internal ear, serving to conduct auditory impulses to the brain. The hypoglossal nerve belongs exclusively to the somatic system and supplies muscles of the tongue with motor impulses. The vagus glossopharyngeal and facial contain both splanchnic motor and sensory components. The eighth cranial nerve is exclusively concerned with highly specialized somatic motor impulses. By means of its vestibular and acoustic divisions it mediates the transmission of impulses necessary for equilibratory control as well as in hearing. Two of the cranial nerves connected with the medulla have no dorsal root ganglion, the spinal accessory and the hypoglossal. The vagus and glossopharyngeal have two, the eighth has one in relation with each of its divisions. The facial has a small dorsal root ganglion, the geniculate ganglion at the beginning of the facial canal.

In the gray matter of the medulla are found nerve cell roots, which briefly reviewed are the nuclei of the dorsal column, the cuneate and gracilis nuclei, which relay sensory impulses to the cerebral cortex. The dorsal nucleus of the vagus, the nucleus ambiguus, the nucleus of the glossopharyngeal nerve, the nucleus fasciculus solitarius, the hypoglossal nucleus, Deiter's nucleus, all mediate the special function

as indicated above. In the white matter we have reviewed the decussation of the pyramids. The decussation of the fillet is accomplished by the crossing of the internal arcuate fibers. It makes possible the contralateral connection between the sensorium of one side of the body and the opposite cerebral sensory cortex. Four other decussations occur. They are the inferior olivary decussation, decussation of the external arcuate fibers, the decussation of the trigeminal fibers and the decussation of Deiter's nucleus. In the lateral white column, the various spinal tracts are rearranged. The spinothalamic and the rubrospinal tract lie ventral to the substantia gelatinosa—dorsal to the inferior olive. In the ventral white column we find the pyramids dorsal to which are fibers of the mesial fillet, the fasciculus predorsalis and the fasciculus longitudinalis posterior. The essential findings in the arrangement of the white matter of the medulla oblongata are the increasing prominence of the ventral white column, the main pathway for volitional control but also forming part of the conduction system which serves to convey sensory impressions from the body to the cerebral cortex. The shift from the dorsal white of the cord to the ventral white of the medulla oblongata is so complete that nothing remains in the cephalic portion of the bulb of the important group of fibers constituting the column of Gall and Burdach. Also important is the shift of the pathway for volitional control from the lateral white column of the spinal cord to the ventral column of the medulla.

To sum up, in the words of Tilney, "the gray matter of the medulla mediates an essential control over respiration, cardiac activity, phonation, articulation, deglutition, digestion, secretion and metabolism. It also acts as an important relay station for both divisions of the auditory nerve. The white matter represents the continuity in all of the major conduction paths which serve to maintain efficient relation between receptors and effectors of the body. Not only is it traversed by many of the most important afferent and efferent pathways of the nervous system but it is also the site of the decussation of the several conduction systems notably the mesial fillet, Deitero spinal, olivo cerebellar and pyramidal tracts."

THE PONS VAROLII

Cephalad of the medulla oblongata is the pons Varolii, occupying the mesial portion of the posterior cranial fossa. This structure appears in mammals only, and reaches its highest development in the primates. Tilney states, in describing the function of the pons,

that the pons contributes largely in the synergic control of movements, which are mediated through the cerebellum. In man there is a more varied motor range and also there is present to a remarkable degree the capacity for varying the inherited type of motor response. Thus there is greater need for synergic control than in the more simple motor acts of lower animals and so there has developed close communication with visual, auditory and somatic sensory and motor areas of the cortex in order to better coördinate these motions. As skilled acts vary in direct ratio with intelligence, the pons particularly the basal portion may be considered as an index of cortical development. The tegmental portion of the pons serves as an additional complementary but nevertheless essential control of the autonomy which the medulla holds over vital processes.

The pons receives its name from the fact that it resembles a swing-like suspension bridge across the ventral surface of the tegmentum of the hind brain, suspended by the middle cerebellar peduncles from either side of the cerebellum. The main structures of the pons are the nerve fibers which form the connection between the cerebral cortex and the cerebellum. The pontile fibers arise in the frontal, temporal and occipital regions of the cortex and communicate with the lateral lobes of the cerebellum of the opposite side thus making the cerebellum directly controllable by the cortex and so securing cerebral control of the voluntary musculature, somatic sensibility, also auditory and visual sensibility. It rests upon the baso-occipital portion of the occipital bone and upon the dorsum sellae. The lower boundary is the bulbopontile sulcus, the upper the pedunculo-pontile sulcus. Ventral to the pons is the dura mater covering the mesial portion of the posterior fossa of the skull, the vertebral artery and the two abducent nerves. Laterally, it is in relation to the two middle cerebellar peduncles and also the lateral lobes of the cerebellum. Dorsally, it is in relation to the vermis of the cerebellum. The vascular supply is from the basilar artery, which sends small branches to the nuclei of the fifth, sixth and seventh nerves. The cephalic portion receives branches from the superior cerebellar artery and the anterior inferior cerebellar artery. The ventral surface shows a median depression, the basilar groove lodging the basilar artery. The lateral surface is concealed by the overlapping lateral lobe of the cerebellum. The structure upon the lateral surface is the middle cerebellar peduncle, the final link in the connection between the cerebral cortex and the lateral lobe of the cerebellum. Near the cephalic extremity of the lateral surface are the fibers which make up the trigeminal nerve. The dorsal surface is concealed by the

vermis, removal of this discloses the fourth ventricle, in the floor of which arise the nuclei of the eminentia hypoglossal, the nuclei funiculi teretis associated with the acoustic striae which latter traverse the width of the ventricle. Cephalad to these fibers is the eminentia abducentis. The fasciculus longitudinalis posterior lies beneath the floor of the ventricle, covered by a thin layer of central gray.

The principal changes in the pons from the medulla are the transverse pontile fibers which constitute the basilar portion of the pons and the extensive pontile nuclei, principally the nuclei of the facial abducens, motor trigeminal and the vestibular. Characteristic of the white matter are the three strata of the pontile fibers, the appearance of the lateral fillet and the shifting of the mesial fillet to a transverse position and the superior cerebellar peduncle. Three decussations in the pons are the trapezoid, complete decussation of the trochlea and the complete decussation of the palliocerebellar pathway.

Through the motor nucleus of the trigeminal nerve the pons innervates several glands as well as several muscles of mastication; through the facial, the muscles of expression and several ear muscles. The importance of the face innervation lies in the three divisions, upper, middle and lower. Nuclear or affections causing a peripheral type of facial palsy show a corresponding reaction of degeneration. In supranuclear affections since the nucleus supplying the upper facial muscles receives volitional control from both sides of the motor cortex there remains the ability to wrinkle the forehead and corrugate the eyebrows.

Through the nucleus abducentis the pons innervates the external rectus muscle of the eyeball. This muscle is the pace maker of the eye movements especially in a horizontal plane. Through the large sensory nucleus which constitutes the cephalic portion of the substantia gelatinosa the pons innervates a portion of the front of the head, the face, part of the external ear, the nose and nasal cavity, the eye and orbit, the palate and nasopharynx and part of the tonsil, the cavity of the mouth and tongue. It also contains secondary tracts of the auditory pathway through the superior olivary nucleus and the nucleus trapezoideus.

As in the case of the medulla the pons also affords the continuance of a conduction path of the brain, both ascending and descending tracts pass through. The pyramidal fibers are here separated in a number of fasciculi because of the transverse fibers of the pons. The mesial fillet, mediating critical sensibility, now extends transversely across the neuraxis forming the boundary between the teg-

mentum and the base of the pons. The spinal fillet now ascends and becomes the spinothalamic tract (pain and temperature). The lateral fillet decussating in the pons continues as the cochlear pathway (auditory conduction) to the cerebral hemisphere. The pontine decussation accomplished through the transverse fibers of the pons establishes a cross connection between the cerebral cortex and the lateral lobes of the cerebellum. Its purpose is the synergic control in skilled movements.

CLINICAL CONSIDERATIONS

The anatomical considerations of the medulla will readily explain the fact that small lesions of the medulla, especially in the more caudal area, may give rise to very marked symptoms. The small caliber, the important centers, the close opposition of the pyramids, will frequently give symmetrical affections in which both sides of the body are involved. Minute lesions may cause a condition of tetraplegia. That this is not more frequently the case is due to the fact that lesions of the medulla are generally fatal, due to the involvement of the vital centers in the vagal nucleus. As the brain stem becomes broader in a frontal direction, it can readily be seen that we will more often get bilateral affections in the medulla than in the pons. The pons, however, may give us bilateral anesthesia of the trunk and extremities, due to a small lesion that may affect the fillet area, in the caudal portion of the pons where the right and left fillet are in close apposition to each other. In a small mesial lesion of the pons the anesthesia, as a rule, only extends to deep sensibility. Unilateral interruption of the fillet tract give contralateral sensory disturbances, chiefly in the form of hemiataxia, unless the interruption has taken place in the most caudal part of the medulla, distal to the "decussation of the fillet." In the basilar portion of the pons the pyramids are split up into separate bundles by the transverse pontine fibers. Here small lesions may fail entirely to produce any symptoms, either because too few pyramid fibers are affected, or because the pyramids have escaped altogether. Focal lesions of the brain stem, which interrupt the cortical tracts alone, are almost impossible, for these tracts have mingled with them, as already stated, the central neurons for the motor cranial nerves. Affections of these nerves then, either at a supranuclear level or nuclear, in the latter case associated with trophic disturbances and permanent paralysis, constitutes a very important principle of localization of the level of the lesion. It is not necessary that the focus of disease shall actually include them in the area. Neighboring foci may, indirectly by action

of pressure, or by causing circulatory disturbances, bring about serious impairment of the nucleus. Such affection with the concomitant involvement of the long tract in their course through the brain give us a further criterion in localization. In such cases we frequently meet with some form of the condition known as hemiplegia alternans, *i.e.*, cranial nerve involvement on one side and a simultaneous contralateral interruption of motor and sensory tracts supplying distally situated organs. Several cases cited below are well adapted to illustrate some of these principles.

SYNDROME OF THE NUCLEUS AMBIGUUS AND THE NUCLEUS HYPOGLOSSUS
(*Syndrome of Tapia—Syndrome of Horner*)

The patient J. H., male, aged sixty-four, occupation clerk, presented himself at the Neurological Clinic of the Post Graduate Hospital, on Oct. 2, 1925, complaining of inability to swallow and a dropping of the right eyelid. Looking at objects he said that at times he saw them twice, one above the other. He further complained of feeling weak and tired all the time. The onset was rather sudden on July 2, 1925. While he was engaged in checking bills, the patient suddenly became aware that the figures "jumped" above his line of vision. That evening on his way home he saw two street cars one above the other. He went back to work the next day, but a week later while at his desk his tongue suddenly became thick and he was unable to speak or swallow. Since then he has regained most of his power of speech but the tongue still feels thick and he is no longer able to swallow solids. Fluids are swallowed with difficulty. These are often regurgitated through his nose. About two or three weeks ago his right eyelid completely drooped and he was no longer able to raise it. He has since been very weak and tired all the time and unable to do his work. There is no past injury or disease of note. He suffered the usual diseases of childhood but no complications or sequelae resulted. He was a moderate user of tobacco and until three months ago was a moderate user of alcohol. His weight was 149, his best weight was 179 several years ago. Of his habits and family history there was nothing of special note. Examination of the voluntary motor system showed no abnormal attitudes or deformities. His gait was normal with the normal associated movements of the trunk, arm and head. Equilibratory tests showed no ataxia in gait or station. Non-equilibratory tests showed slight ataxia in the finger to nose test, probably due to a coarse tremor of the outstretched hands. This slight ataxia was also noted on finger to finger tests. Pointing and past pointing were normal, as were also heel to knee tests and toe to object test. Skilled acts were normal. There was no adiadochokinesis. There was slight dysmetria probably due to tremor of the hands, which tremor was coarse, irregular and moderately rapid.

Some slight twitchings were noted in the right and left side of the face, but these were of old standing. His deep reflexes were evaluated at two plus, both right and left. The tibio-adductor was present. There was no ankle clonus. The superficial reflexes present and evaluated at one plus, right and left. The cremasteric were not elicited. Plantar flexion was present. No Babinski or fanning, no Chaddock, Oppenheim, Gordon, or Schaefer reflexes were present. The muscle strength over the body general was normal for his age and occupation. No atrophy or hypertrophy was noted. The muscle tone was normal. There was no abnormal irritability or myoedema. When the right hand was grasped firmly there was noted flexion of the fingers in the left hand. There was no Hoffmann or Klippel-Weil. No abnormal associated movements were noted. The nerve status was normal, no Trousseau, Chvostek, Tinel, or tenderness noted. Sensory examination for acuity, discrimination and localization showed normal. Pain and temperature sense were normal. Vibratory, pressure and muscle tendon sense were normal. Of the cranial nerve examination the olfactory was normal, both subjectively and objectively. The eye examination showed the left pupil larger than the right, the right showing some slight irregularity, the left normal. Right 2 mm. left about 4 mm. with the position normal. Reaction to light present both on the right and left. Consensual left to right and right to left, normal. The reaction to convergence both left and right was present. No Argyll-Robertson pupil present. Position of the eye normal. Slight diplopia present subjectively. There was no exophthalmus, slight enophthalmus on the right. Movements of the eyes showed limitation of movement of the right eye inward and slight impairment in motion of the right eye upward. Palpebral fissure left greater than the right. Ptosis present on the right. There was no Von-Graefe or Kocher, no Stellwag. Horner present on right. Iris, lens, cornea, and conjunctiva normal. Arcus senilis present right and left. Acoustic nerve and ear showed all tests normal. Air conduction greater than bone conduction. Motor fifth showed some slight apparent weakness. Patient complained of difficulty in closing the mouth at times. The corneal reflexes were normal. There was marked pyorrhea and caries in the teeth. The facial nerve, motor normal right and left. Associated movement of the face, eyes and head were normal. Vasomotor and secretory status normal. There was an old bilateral tic. Taste subjectively and objectively was normal. The position of the uvula was central. The left palate moved more than the right. The palatal reflexes were diminished right and left. The pharyngeal reflex was absent. The quality of the voice was nasal. Swallowing was difficultly performed, many times with regurgitation through the nose. There was marked congestion of the pharynx with increased mucus production and salivation. The spinal accessory nerve was normal. The position of the tongue when protruded was tipped to the right. Movement of the tongue in all directions was limited and weak, the right half of the tongue seemed

slightly smaller than the left. No fibrillatory twitchings were noted, though the right half of the tongue seemed more corrugated than the left. Mental status was normal with no diminution of intelligence, attention or memory. There was a tendency to slight depression. Somatic examination was generally negative except for the heart which showed feeble beats, though regular. There were marked varicosities of the lower extremities. The blood pressure was 100/78. Laboratory tests showed the blood Wassermann negative, urinalysis showed no hyaline and granular casts and a trace of albumin. Examination of the eyes by Dr. Alger showed media clear. Fundi showed some senile perimacular changes and some angiosclerosis. Pupils on that date were equal and normal and the exophthalmometer registered 19. Tension was normal in both. Vision 20/30 in each eye. Cocaine dilated the left eye widely and the right not quite so much. Examination of the pharynx, larynx and vocal cords by the Nose and Throat Department of the Hospital showed slight reduction in the action of the left cord due to central nerve lesion. In the examiner's opinion the pharynx was suggestive of lues. Fluoroscopic examination of the oesophagus showed an apparent partial obstruction in the upper oesophagus. Above this point moderate dilatation seemed to exist. The mid and lower thoracic oesophagus was apparently normal. Through the failure of proper injection further exposure was suggested. Further examination showed no definite abnormality of the oesophagus except for the above point of constriction with slight dilatation above it. The X-ray showed no lesion in the cervical spine. The patient became progressively worse. Difficulty in swallowing became more pronounced and severe inanition set in. He became bed-ridden and died of some pulmonary complication early in January, 1926.

Comment.—The lesion in this case was probably one of thrombosis with the consequent affection of the medulla involving the hypoglossal and vagus nerves which explain the tongue and palate and cord involvement, the lesion extending dorsally to include the pupillary center of the medulla—a group of cells situated dorsally to the nucleus ambiguus giving us the syndrome of Horner—the ipsilateral enophthalmos, myosis and sympathetic ptosis. The X-ray findings are readily interpreted as the result of slight failure in the action of the musculature of the upper portion of the oesophagus innervated as the larynx by the vagus. Thus the entire symptom complex is explainable. In the absence of all sensory or other motor symptoms in either splanchnic or somatic components, the absence of any peripheral lesion of the twelfth and tenth in their peripheral course at the cervical level and the fact of the simultaneous involvement of the tenth and twelfth, point to the localization as occurring in the medulla oblongata.

SYNDROME OF THE NUCLEUS AMBIGUUS AND SPINAL FILLET
COMPLICATED BY SYNDROME OF HORNER*(The Syndrome of Avellis)*

The case was seen by me through the courtesy of Dr. George Blakeslee to whom I am indebted for a complete report.

A. W., age fifty-six, single, white, clerk by occupation, born in Denmark, resident of the United States for the past thirty-four years.

The patient had a cold and coughed a great deal for a week or more preceding the onset of the present complaint, but otherwise enjoyed good health. On March 16, 1923, he noticed a closing of the left eye. On March 17, 1923, late the next day, he began to have difficulty in swallowing with a regurgitation of fluids through the nose, and his voice changed to a whisper. On March 18th, the second day following the onset of the illness, he noticed that the wind blowing in through the window of his room felt different on the right side of his face than on the left side. On the right side of his face he noticed the wind as giving a warm sensation. At this time when bathing he noticed that the cold water felt warm on the right side of his face, the right upper and lower extremities. A few days following the onset of his symptoms the fluids ceased to regurgitate through the nose and he swallowed with less difficulty. On March 23, 1923, the patient was admitted to the Post Graduate Hospital on Dr. Tilney's service as an ambulatory case, with the following complaints: Closing of the left eye, difficulty in swallowing, change in voice, and sensory changes on the right side of face, right arm and leg. Injuries and Diseases: None except measles at six years of age. Habits and General Physiological Status: One cup of tea, two of coffee daily. Smoked cigars, no drugs used. Sleeps and eats well. Is constipated. Best weight 183, six years ago. Present weight 172 lbs. No urinary disturbances. Nocturia once a night. Eroticism diminished. Potency normal. Family History: Father died at fifty-seven years of typhoid. Mother died at fifty-seven, cancer of the stomach. Patient has never been married.

Examination: Voluntary motor system. Abnormal attitudes and deformity. Stands erect. Right palpebral fissure greater than the left. Gait normal. Associated movements of trunk, arms and head are normal. Coördination: Equillibratory tests: Standing with feet together, eyes open, normal. Eyes closed, Romberg absent. Standing on the right and left foot, normal. Non-equillibratory tests: Finger to nose and finger to finger, no ataxia present but there is a slight intention tremor. Each finger to thumb, eyes open and closed are normal. Pointing and past pointing left and right are normal. No adiadochokinesis. No dysmetria. Skilled acts are normal. Abnormal involuntary movements. A fine tremor of the fingers and a coarse tremor of the tongue. Reflexes: The deep are active and equal in the upper and lower extremities. There is

no ankle clonus. Superficial: Ciliospinal questionable on the right. Absent on the left. The abdominals evaluated at two on the left, on the right minus two or one plus. Cremasterics active and equal. A diminished plantar reflex on the right, normal on the left. Babinski absent, right and left. Confirmatory test of the Babinski phenomenon, absent on the right and left. The muscle strength is normal. Muscle status as to volume and contour normal. Consistency and tonus normal. Irritability not increased. Myoedema absent. Abnormal associated movements. Hoffmann and Klippel-Weil absent. Grosset-Bychowski absent.

General Sensory: Touch for acuity, localization and discrimination was normal. Pain diminished on the right trigeminal area, lost in the right arm, leg, body and head. Temperature: Diminished in the right trigeminal area, lost in the right arm, leg, body and head. Vibratory: Normal left and right. Pressure: Normal on the right; on the left lost, *i.e.*, the hurt element was lost. Muscle tendon sense, stereognosis and barognosis normal both right and left. Cranial Nerves: There was no subjective disturbance in the olfactory sense. Vision was corrected to normal by glasses worn. The fundi showed moderate angiosclerosis. The pupils showed the right greater than the left, the right being 3 mm., the left 2 mm., irregular in shape, position normal, no hippus present. Reaction to light was normal. To accommodation, slight impairment on left, normal on right. The consensual left to right and right to left was normal. Argyll-Robertson pupil was present. Enophthalmos, left greater than the right. A few nystagmoid jerks were present when focussing to the right and left. These were of small amplitude. The palpebral fissure was greater on the right than on the left. Partial ptosis present on the left. Horner's sympathetic paralysis present on the left. Hearing, right better than the left. Has had impaired hearing in the left ear for many years. Air conduction greater than bone conduction, both on right and left (positive Rinne). Vibrating tuning fork referred to the left in Weber's test. Vestibular and rotatory tests were not done. The tympanum in each ear was thickened, greater on the left than on the right. All the muscles of mastication on the left and right were normal. Corneal reflex on the right was diminished, and the left was normal. The left face seemed flattened, emotional reaction gave greater motor activity on the right. The position of the uvula was found pointing to the right. Movements of the palate during phonation on the right are normal, on the left showed a paresis. The pharyngeal reflex on the right was normal and the left impaired. The quality of the voice was nasal and a low tone. Vocal Cords: Laryngoscopic examination by Dr. R. W. MacPherson showed almost a total immobility of the left side of larynx. Swallowing showed slight impairment. At the time of the report an occasional impairment. The spinal accessory showed no involvement. The position of the tongue was central and movements in all directions were normal. No trophic changes were noted.

The Mental Status: Normal. Systemic examination showed an increased secretion of tears of the left eye and increased prominence of the blood vessels of the conjunctiva of the left eye with turgescence. The patient was placed in a hot bath on the 29th of March. Examination of the face showed very little perspiration on the left side of the body and left side of the face, but perspiration flowed profusely from the right side of the face. On the night of April 22, 1923, the patient attended the movies and as it was an extremely hot night, he noticed that the left side of his face was dry and the right side perspired profusely.

Cardiovascular examination was negative except that the heart rate ranged between 80 and 108, with an average of 90. Blood pressure was 180/100. Pharmacological test: A few drops of a 4 per cent solution of cocain was instilled in each eye with the result that the right palpebral fissure widened and the pupil dilated widely and there was marked exophthalmos of the right eyeball. There was no change in the left eye.

Laboratory Tests: Urinalysis: Sp. Gr. 1020-1025. No albumin or sugar, no casts present. There were a few calcium oxalate crystals and a few epithelial cells. Blood Wassermann was negative as was likewise the spinal fluid Wassermann. The colloidal gold was negative. Cell count—two cells present with no increase in globulin.

Comment.—The lesion in this case was probably one of hemorrhage in the radicular branches supplying the medulla oblongata. This is definitely borne out by the fact of the simultaneous involvement of the nucleus ambiguus, the supply of the larynx and palate and the spinothalamic tract (spinal fillet) which lie close together in the lateral white column and are susceptible to the damage caused by a small lesion. So we have the loss of pain and temperature sensibility in the entire opposite half of the body including the skin over the scalp to the interauricular line. This constitutes the syndrome of Avellis, in this case complicated by the syndrome of Horner, produced by a slight dorsal extension of the hemorrhage to include the pupillary center.

SYNDROME OF NUCLEUS AMBIGUUS, PYRAMID AND SPINAL FILLET

The patient H. S., male, age forty-eight, was seen by Dr. Blakeslee at the clinic on Feb. 2, 1925, and was examined by me several times at later dates. He was a Russian peddler and referred from the Manhattan Eye and Ear Hospital for a neurological report. With him came a letter, as he had been previously referred to the Neurological Institute whose clinical record showed that the pharynx and the palate were hypesthetic. There was not a total loss of sensation. There was present considerable hoarseness and difficulty in phonation. The fundi were negative. There was an external strabismus of the left eye which the patient stated dated from birth. The reflexes were unaltered. No Babinski, no clonus, no

Romberg was present. The impression recorded was that it was a peripheral condition, not a central lesion. His complaint on the date of admission was difficulty in swallowing, hoarseness, pain in the right side of the larynx, pain in the right pectoral region and emaciation. The first symptom noted by the patient was pain in the right side of the larynx six months ago. The onset was gradual. The patient believed he was constantly getting better. Additional data showed that there was no difficulty in swallowing and the pain in the right pectoral region was present at the same time as the pain in the right side of the larynx, gradually also hoarseness of voice and some difficulty in talking was noted. There was nothing of particular note in the past personal or family history. He had sustained a fracture of some ribs on the right side about ten years ago. Lues was denied by name and symptom. He was a moderate smoker and abstained from alcohol. He had five children living and well.

Examination: The voluntary motor system showed a definite weakness of the right arm and leg. He seemed to find difficulty in standing on the right leg. Standing with feet together was fairly well performed but on the right foot alone it was accomplished poorly. Non-equilibratory tests were normal. There was no adiadochokinesis or dysmetria. The reflexes showed unequal abdominal reflexes right being greater than the left with a transient clonus both on the right and left, the right more enduring. Muscle strength was normal. Tonus, consistency, volume and contour were normal. No abnormal associated movements were noted. Sensory examination showed no objective changes except in reference to the pain sense which was slightly less on the left than on the right. Temperature sense at this examination showed no change. Other modalities were normal. The cranial nerve examination showed the pupils left greater than the right by about 1 mm. but both reacted to light and accommodation promptly. There was an old external strabismus of the left eye. The right corner of the mouth seemed to drop slightly lower as compared with the left. The uvula pointed to the left. There were no marked differences in the motion of the palate, though there was greater elevation on the left than on the right. Also the muscles going from the palate to the fauces on the left showed greater contractile power than those on the right. All other cranial nerves were normal. The fundi were normal. The blood pressure on this date was 138/90. Subsequent examination on March 23rd and then about a year later disclosed practically the same finding in the palate and vocal chord motor and sensory examination. At this latter date the temperature seems to be better interpreted on the right than on the left, but no distinct loss was present. X-ray and laboratory tests done at other institutions were all said to be negative. A special laryngeal examination showed the same condition of left-sided paralysis present. The suspicious facial finding was not confirmed. The mental condition was normal, except for a certain amount of concern and depression incidental to his difficulty.

Comment.—The above case does not clearly indicate the etiological factor responsible for the condition. There is some likelihood of thrombosis as there was no marked disturbance in consciousness and as the lesion seemed to come on gradually. Apparently, the involvement of the spinal fillet is not of a very grave character. The findings though distinct, were not the typical complete loss of pain and temperature that follow in lesions of the spinal fillet. That of the palate and vocal cord was permanent and decisive. The affection of the nucleus ambiguus and the spinothalamic easily occur conjointly when it is recalled that they lie close together in the lateral white column of the medulla. We have a complicating factor in this case in the involvement also of the pyramidal tract, the lesion is probably in one of the radicular arteries supplying the medulla, which may easily cause the picture given above as regards the syndrome of Avellis—characterized by the laryngoplegia and palatoplegia associated with a contralateral pain and temperature disturbance. Perhaps an additional lesion must account for the pyramidal tract finding. Again, we seldom can find cases of these symptom-complexes in classical form as the pathology is continuous and the findings resulting necessarily from involvement of important structures will change from day to day. Thus, so to speak, only fleeting pictures can be secured of these classical syndromes. Reëxamination will frequently show the circumscription of the lesion not to obtain, since the clinical picture has changed.

SYNDROME OF THE VESTIBULAR NUCLEUS

The patient, age forty-nine, white, Russian, a peddler by occupation, presented himself at the clinic on July 31, 1925, with the following history: Attacks of vertigo which began about a week ago after an interval of five years during which there were none. He also complains of pains in the back and the soles of his feet, and "noises in the right ear." He had a similar attack about five years ago. Previous to his first attack he had had an attack of pneumonia which left as a sequel, cardiac disease. He subsequently suffered attacks of vertigo on and off for two years. In these attacks he became very dizzy, sometimes falling to the ground but usually he managed to get hold of something for support. He has noises in the right ear for the entire length of the attack which would last ten to fifteen minutes. He would grow weak and pale, sometimes would vomit. He could not stand up without support. Then after the attack he could not walk in a straight line but would reel from one side to the other.

The past general and personal history discloses nothing important. He complained of poor hearing in his right ear and was worried about the

condition. He had had pneumonia several years ago which had left him with a weak heart. Family history was practically negative. His general neurological status was completely negative with the exception of beginning vertigo when he was about to lie down. A few nystagmoid jerks were noted. His disks were noted as being very pale. Bone conduction was greater than air conduction equally on right and left. There was no middle ear condition. The blood pressure was 110/60. The pulse 82, occasionally intermittent, the irregularity occurring about every six to ten beats. The history and description of acute attacks were confirmed by a relative, who described the acute paroxysm minutely, stating that the patient became very pale with moist, clammy perspiration on his forehead and complained of being very dizzy, with the bed, he said, turning round and round. Occasionally he would vomit. It would take three or four days before he felt well enough to resume his usual work.

Comment.—From the acute paroxysmal nature of the disease one would infer a transitory lesion especially as there is complete good health between the attacks. The etiological factor is probably in the nature of angiospasm in the region of the vestibular nucleus in the medulla. Since the sense of hearing is implicated one would think of Menière's disease, but there is only the slight change in that bone conduction seems to be greater than air conduction both on the right and left. There is, however, no evidence of middle or internal ear disease though the symptoms are exactly similar in the latter disease. The vestibular area of the medulla is abundantly supplied by blood vessels and one can easily think of a probable angiospasm as the cause of the vertigo. There were no other either special or neurological findings except that of lost equilibratory control. This fact in the absence of internal ear involvement argues for the diagnosis of medullary involvement especially when the cardiac condition is taken into consideration.

ABDUCENT ALTERNATE HEMIPLEGIA

Pontine syndromes are particularly characterized by the alternate character of the lesion. A patient, G. H., age four years, first came to my notice on March 1, 1926. The presenting symptoms were a paralysis of the left external rectus muscle coming on one week before. This was apparently sudden in onset and no change was noticed since the onset. The following history was elicited. The child had had measles about three weeks ago, only a mild attack, with slight temperature present. It was reported as measles to the Board of Health. The eye twisting came on over night. No vomiting or convulsions were present. About a week ago the father noticed the left eye turned in and then the child began to complain of double vision when the eye was in a certain position. The

patient has been very cranky in the past month. There were no other illnesses or abnormalities. The child had a normal delivery and normal development up to the present. His present weight is 43 pounds.

Family History: Patient was first born. Another died in Caesarean operation. A third child died at 11 months of some gastric disorder. Father is living and well. Mother is living and well. There is no history of family illness or disease.

Physical Examination: There were no abnormalities in station or gait. No abnormal involuntary movements were noted. His superficial reflexes showed uniformly increased reflexes on the right over the left. The right evaluated at two plus to three. The left at two. Right patellar was three, the left two, as was also the Achilles. Due to excessive crying when stroking the abdominals these may not have been accurately determined or accurately evaluated. There were present definitely the Babinski toe and fanning phenomena on the right, also Chaddock reflex on the right but not on the left. No other pathological reflexes were elicited. Muscle strength and muscle tonus were normal. No abnormal associated movements were noted. Sensory examination was normal. Of the cranial nerves only the presence of the left external paralysis was noted. The fundi were normal. There was no nystagmus or ptosis. Dr. Reder's report of the eye condition confirmed the left external rectus palsy with diplopia which increased as the patient looked outward to the left. Tested with light the diplopia in horizontal direction became wider and wider apart in reference to images. The fundi were confirmed as normal and the pupillary reactions normal. There was no error in refraction. The paralysis was reported as a convergent squint due to paralysis of the sixth nerve. The limitation of motion is to the mid-line only (in refractive errors the eye goes outward). **Diagnosis:** "Non-refractive convergent squint due to paralysis of the sixth nerve. Right eye normal in every particular."

The other cranial nerves were normal in all respects. Mental status was normal for the age. General systemic examination showed no abnormal findings of any kind.

Comment.—The etiological factor here is probably the toxemia attendant on the measles. This toxemia probably produced a thrombosis in the cortical portion of the pons. A small lesion here would involve both the emergent fibers of the sixth nerve and the pyramidal tract giving us a syndrome of alternate abducent hemiplegia. In reference to nomenclature there is a little confusion on the subject. Perhaps it were best if no definite names were attached to the syndromes other than the anatomical designation of the site of insult. Millard-Gübler Syndrome is the name sometimes given to this condition. But Bing (2) reserves this name only when the picture

is further complicated by facial paralysis on the same side as the abducent. Tilney (1) speaks of several variations of abducent syndrome one of which is with the involvement of the facial. On the other hand, Bing speaks of this above syndrome as Foville's. In contrast to Tilney who reserves the title Millard-Gübler Syndrome for the pure hemiplegia alternans facialis, Jelliffe and White (3) delimit the Millard-Gübler Syndrome to a contralateral hemiplegia of the trunk and extremities without inferior facial palsy, without hemianesthesia and without the syndrome of Foville, with alternate paralysis of the sixth nerve alone, or sixth and seventh if the lesion extends laterally. Apropos of the above, we should bear in mind that the pathology in any given case is continuous and the lesions resulting therefrom cannot at any time be sharply limited but may vary constantly. Only as fleeting phases can we distinguish some of these very interesting syndromes and often with reëxamination only a short time later one may find an entirely different picture. It is also possible in reference to the facial form of alternate hemiplegia to have a nondegenerative form both of the facial and extremity paralysis. In such a case, though rare, it is true, the lesion is so situated that neither the facial nucleus nor the issuing root is involved, but instead the central facial tract shortly before its entry into the nucleus and thus immediately after it has crossed the midline and entered on the side of the lesion. Thus cases of supranuclear involvement of the facial nerve associated with paralysis of the extremity is readily visualized.

HEMIPLEGIA ALTERNANS HYPOGLOSSUS ET FACIALIS.

The following case well illustrates the continuity of the pathology and the variation of clinical manifestations. They show the variation of the alternate facial hemiplegias and complicating factors. The patient, P. D., age fifty-five, first came to the examiner's notice on October 5, 1925. He was a waiter but unemployed because of his disability which came on gradually, over two years ago, and seems to have grown progressively worse. His complaints consisted in difficulty in walking and weakness in the right leg. He believed the onset to be about two years ago. While at work as a waiter he suddenly felt a twitch in his neck on the right side and was unable to talk properly to give his order to the chef. About one year ago he began to have difficulty in walking, frequently stubbing his right toe. His condition had been progressively getting worse until he began to drag the right foot. He complained of some dyspnoea, but no headaches, and no dizziness. He had previously been a heavy drinker but for the past year had been abstinent. He had no difficulty in swallowing. He had no other complaints. The previous

history as to injuries and diseases is negative. Lues is denied by name and symptom. There is nothing important in the past family history.

Examination: A definite left facial weakness was readily noted on inspection. Gait is ataxic, shows a tendency to drag the right foot. The toe of the right shoe shows wear. The associated movement of the right arm in walking is considerably reduced. Of the coördination tests, the patient being right-handed, the non-equilibratory tests showed some slight ataxia on the right, both on the finger to nose and finger to finger test. Patient showed a Romberg which is not constantly elicited. There is also ataxia on the right side when the heel to knee test is performed. Adiadochokinesis is present on the right. Reflexes show a general increase on the right over the left. The abdominals were difficult to elicit and evaluated at one. There was fanning on the right, also Oppenheim. All other reflexes were normal. Muscle strength and tone were normal. No reaction of degeneration present in any of the muscles of either the right or left extremity. There was a Hoffmann sign present on the right, none on the left. There were no abnormal associated movements. Sensory examination was completely negative. The olfactory and optic cranial nerves were negative. The fundi were normal. Pupils gave a normal reaction to light and accommodation. There were evidences of arteriosclerosis in the arcus senilis present. The palpebral fissures showed the left greater than the right. The acoustic nerve showed hearing less acute on the left than the right both subjectively and objectively. Fifth cranial nerve normal. The facial showed the left nasolabial fold less marked than the right and the angle of the mouth lower on the left than on the right. The upper branch was apparently normal. There was an indefinite diminution of movement of the palate on the right during phonation. The spinal accessory nerve was normal. The hypoglossal nerve showed involvement. The tongue deviated to the left and showed some corrugations on the left, with the left half smaller than the right.

Mental status was normal. On the general systemic examination there were no marked findings except those showing a marked arteriosclerotic condition. The blood pressure was 220/110. The various laboratory tests were all negative. Special examination showed the Barany tests normal. There was no spontaneous nystagmus; pointing and past pointing movements were normal.

Comment.—The lesion here was undoubtedly a hemorrhage and this is borne out by the arteriosclerotic changes in the vessels and the high blood pressure. The site of the lesion is in the medulla on the left side involving the left pyramid and the left hypoglossal nucleus. The pyramids subsequently decussating give the paralysis on the right side while the left side of the tongue was affected. We have here a further slight complication in the facial of the left side which is the lower two-third variety and which the patient

has never previously noted. Whether it is the residual of some old condition it is hard to say as there was no reaction of degeneration. It is more likely that there may have been a progression of the symptoms with the lesion extending across the midline, or it may be an irritative or pressure phenomena due to interference with the circulation in that region of the facial.

HEMIPLEGIA ALTERNANS FACIALIS INCOMPLETE COMPLICATED BY SUBSEQUENT ISPILATERAL HEMIPLEGIA

Another case which shows the continuity of the etiological factors in producing ever extending lesions is the following:

The patient, a female, fifty-four, M. K., housewife, American, first came to the examiner on February 19, 1925, complaining of twitchings all over the body, general nervousness, shooting pains on the head, hot flushes all the time, though these latter first began five years ago and are worse now. Particularly she complained of dizziness, saying she could not turn in bed, everything would turn around her and she would feel nauseous. When walking she would fall over to the right more than to the left and had to be careful of her gait. Her first symptom was dizziness which has been gradually getting worse. The onset of the dizziness was about six months ago. She admitted no real headache, no nausea or vomiting, no loss of consciousness. She said, however, that her right side was getting progressively worse. Quite a number of other neurotic symptoms were stated. She has had trouble with her husband and lost her home. She got frequent crying spells, was very irritable and felt peculiar twitches all over her body, but particularly she felt that her mouth was twisted on the left side by these twitches. There is nothing in the past history of importance. Lues is denied by name and symptom. Her weight was 198. She slept poorly, dreamt considerably and had poor appetite. Menses had ceased three years ago. She had no difficulty in urination. She has had four children and two miscarriages which were natural. Her father was living and well. The mother died of some nephritic condition. Several brothers and sisters were living and well. There was no family disease or predisposition.

Examination: It was noted that she held her head rather stiffly and though walking normally, was guarded in her steps and walked slowly. Coördination tests both equillibratory and non-equillibratory were normal. There were no abnormal involuntary movements. The reflexes showed the biceps, triceps and radial at three plus on left, three on right. The patellars three plus, on the right three. The Achilles on the left two plus, on the right two. The abdominals could not be elicited because of

patient's obesity. There was a questionable Babinski on the left, none on the right, but fanning was present, both right and left. All confirmatory signs were absent. Muscle strength and status were normal. There was no evidence of abnormal involuntary movements. Sensory examination was negative. Hoffmann was present both right and left. The fundi showed evidences of arteriosclerosis. Reactions to light and accommodation are normal. The position and movements of the eyes were normal. Palpebral fissures showed the right greater than the left. Air conduction was greater than bone conduction, both right and left. The fifth nerve was normal, the seventh showed a right lower facial paresis. The glossopharyngeus and vagus were normal as were likewise the eleventh and twelfth. The mental status was normal, with respect to intelligence. Overanxiety with slight depression was present. General systemic examination noted the obesity, pulse rate of 84, blood pressure 180/80, hot flush over the face. At subsequent examination on March 26, 1926, there were signs of slight hyperreflexia on the right, greater than the left. Hoffmann was more actively elicited on the right than on the left. Achilles jerk was more active on the right than on the left. The blood pressure showed 200/100. Patient complained of the dizziness and said that she had to take a long time to effect any change in posture as the slightest movement and particularly change in posture even to the side was accompanied by severe pains in the head. Laboratory tests were negative with the exception of the urine which showed some slight nephritic condition present.

Comment.—In this case the patient undoubtedly had an incomplete facial paralysis on the right with left hemiplegic signs which subsequently showed in addition an ipsilateral hemiplegia. One should be wary of the presenting symptoms. Any organic lesion may be masked by neurotic symptoms. In this case the patient undoubtedly had some of the neurotic symptoms associated with the menopause, such as the hot flushes, nervousness, irritability, etc., but also had grave organic symptoms and findings. The lesion here was hemorrhagic in the caudal half of the pons, right side, involving the facial fibers and the pyramidal tract. This tract subsequently decussating gave the appearance of paresis on the left side of the body. The sixth nerve is very frequently involved in these lesions but apparently escaped here. However, subsequently another vascular insult was suffered and increasing signs of involvement of the right side were found. There was apparently no nuclear or infranuclear involvement of the facial here. Though this instance is an exception to the usual finding in alternating symptom complexes of the peripheral degenerative type of paralysis especially in the Millard-Gübler types, supranuclear paralysis may occur (3).

DISCUSSION

Only a few of the more important syndromes of the pons and the medulla as they occur in clinical practice have been outlined. There are many interesting syndromes, one sees in the patient who is bedridden or in such an advanced state of illness that he is no longer ambulatory. Of particular interest is hemiplegia cruciata-crossed hemiplegia involving the upper extremity of one side, the lower extremity of the other. This can only occur through a lesion in the medulla at the site of the pyramidal decussation, and if this is extensive enough may readily give a tetraplegia, a spastic paralysis of all four extremities. The syndrome of the vago accessory or the syndrome of Schmidt, clinically characterized by laryngoplegia and sternocleidomastoid and trapezius muscle paralyses and the syndrome of the tenth, eleventh and twelfth cranial nerves or syndrome of Jackson, clinically characterized by palatoplegia, laryngoplegia, glossoplegia in addition to the sternocleidomastoid and trapezius paralyses, are two other syndromes which occur with inflammatory, neoplastic and vascular lesions. Jelliffe and White (4) in discussing the syndrome of Avellis speak of the initial apoplectic symptoms in this syndrome and mention as the residuals the hemiplegia and hemianesthesia contralateral to the lesion and a palsy of the tongue on the side of the lesion. They mention that the trigeminal anesthesia of the involved side may also occur. Oculopupillary signs—narrowing of the palpebral fissure on the side of the lesion and cerebellar asynergia are also mentioned. Spiller (5) adds also the paralysis of the soft palate and vocal cord on the same side of the lesion. The syndrome of Babinski and Nageotte (6) may be evidenced by either an acute or subacute involvement. It may be initiated only by dizziness, the patient need not even be comatose. The residuals of this syndrome are crossed hemiparesis, hemianesthesia with deep sensory losses and difficulty in swallowing. Cerebellar asynergia to the side of the lesion, irregularity of the pupils, myosis, enophthalmos and syringomyelic dissociation sometimes occur.

A fairly frequently found syndrome is that of a lesion involving the lateral portion of the medulla and probably due to thrombosis. It is the syndrome of the posterior inferior cerebellar artery whose essential clinical features are lateropulsion, hemiasynergia, hemiataxia and hemifacial anesthesia. Contralateral pain and temperature loss in the upper and lower extremities and face and scalp to the interauricular line. Ipsilateral laryngoplegia and palatoplegia. This lesion is usually that of a widespread occlusion and may be

ushered in with acute dizziness or transitory unconsciousness. There may be bilateral nystagmus worse on the side looking toward the lesion, vertigo, headache, vomiting. Syndrome of multiple lesions in the medulla which affect the pyramid and fillet are due sometimes to scattered areas of degeneration in consequence of thromboses of the vertebral arteries or arise in part as syndromes of multiple sclerosis.

In the pons many interesting lesions of the oculogyric and cephalogyric fibers may be mentioned. The syndrome of Raymond-Cestan depending on a lesion of the basilar arteries or its median branches in the extreme caudal limit of the pons has for its essential clinical features contralateral hemiplegia, hemianesthesia, and oculogyric paralysis with dissociation of the eye movements giving rise to transitory diplopia. Ipsilateral asynergia. Osnato (7) describes an interesting pontile syndrome in a man of sixty-one, with a lesion at the level of the seventh nerve, the decussation of lateral fillet and involving also the pyramidal tract.

We thus see that the pathology will determine the clinical syndrome and the site of the pathological process clearly defines itself by the involvement of the cranial nerves and other structures. According to the extent and position of the focus, we will get complete destruction of the pyramids or only paresis; when both sides of the pons are involved we get acute bulbar paralysis. The pons is a favorite site for foci of softening, not so much for hemorrhage. Encephalitis after influenza frequently affects the pons. Disseminated sclerosis affects the pons. Aneurysm of the basilar artery may by compression of the pons give rise to symptoms of irritation and paralysis. Of tumors the glioma and tubercle are most frequently found. The basilar and vertebral arteries are comparatively often occluded by a thrombus due to arteritis, atheromatous or specific brain disease. The posterior inferior cerebellar artery is the most frequently found affected. Constriction due to arteriosclerosis may sometimes impair the circulation and cause symptoms. Acute inferior polioencephalitis after acute infective illness may be present limited to one side and producing unilateral bulbar paralysis. There need not always be a loss of consciousness with a hemorrhage in the pons. There may be only attacks of vertigo. It should be remembered that lumbar puncture is contraindicated in all lesions of the pons and the medulla because of its possible serious outcome.

Extracranial disease may affect many of the cranial nerves and simulate pontile and even medullary syndromes to some extent. Pollock (8) states that all or several of the last four cranial nerves

may be affected by extracranial disease. The ninth, tenth and eleventh nerves more frequently than lesions of the last four. Due to compression through adenopathies, syphilitic, tuberculous and neoplastic, and through inflammation through infection of the jugular bulb, these nerves may be involved. Gunshot wounds, acute adenitis of pharyngeal origin, also pharyngeal abscess, all may cause syndromes comparable to the intracranial syndromes. Vernet (9) has given the name syndrome of the posterior lacerated foremen to extracranial lesions involving the glossopharyngeal, pneumogastric and spinal accessory. Collet (10) describes a combination of symptoms due to a complete lesion of the ninth, tenth, eleventh and twelfth cranial nerves under the name of glosso-laryngo-scapulo-pharyngeal hemiplegia. The same was described by Sicard (11) as the syndrome of the condylo posterior lacerated foramen. Villaret (12) describes the syndrome of the posterior retroparotid space which is characterized by the addition of a lesion of the sympathetic nerve to the syndrome of the last four nerves, producing thereby enophthalmos, narrowing the palpebral fissure and myosis in addition. Infection involving the parotid or in that region, diseases of the retropharyngeal lymph glands extending to the subparotid gland readily wound the twelfth, tenth and eleventh nerve and often the ninth and cervical sympathetic. The ninth, tenth and eleventh give a triad symptomatically in nasal regurgitation of fluids dysphagia of solids and hoarseness involving respiratory function, palate, pharynx and larynx. There is a marked rareness of tumors in the region of the medulla and with an indefinite symptomatology or as they are sometimes symptomless, they are discovered only at the necropsy table. The symptoms of tumor of the medulla oblongata in cases reported in literature show many variations. Pain in the neck in a few cases, headache, vomiting and vertigo fairly constant. Paralysis of the facial and abducens with paralysis of the uvula, change in voice from hoarseness to aphonia and alternating hemiplegias associated with ataxia are described with sensory symptoms less prominent. Choked disc and dysphagia frequently occur. Rhein (13) emphasizes in the diagnosis of tumors of the medulla oblongata the importance of careful studies for the presence of slight symptoms referable to involvement of cranial nerve originating in the medulla oblongata. In cases presenting pain in the neck and shoulder muscles, associated with hypertonic state of the neck muscles, the pain is due to stretching of the cervical roots, the second and third cervical roots supplying this area. On the point of differential diagnosis we must bear in mind the glossolabial-pharyngeal paralysis, amyotrophic lateral

sclerosis, progressive muscular atrophy, polioencephalitis, pseudo-bulbar palsy, syringomyelia, lues, tumor, myasthenia gravis and hysteria. These can be definitely differentiated from the clear cut syndromes by the absence in the latter of other splanchnic motor and sensory disturbances and by the absence of other somatic motor and sensory disturbances than those present in the syndrome.

From the anatomy and physiology as presented we can deduce the structural principles of localization. No less important is a minute analysis of the order of nerve involvement, the order in which symptoms develop especially in basal lesions. Generally increased intracranial pressure due to neoplasm may readily produce paralysis of the third and sixth which owing to their mesial emergence are usually the first involved. The evidence of other cranial nerve involvement besides these must determine the localization in lesions such as tumor growing into the brain stem or aneurysm of the basilar artery pressing on it. Irritative symptoms may be present usually in the form of hyperesthesia and root pain in the area of the trigeminal, in its motor portion giving rise to trismus and that of the facial nerve to spasmodic contractions. Tinnitus and vertigo may also be present, at times. In infections of the base of the brain as tumors, gummata and tuberculous deposits and circumscribed meningeal inflammation, the third, sixth and seventh nerves are most frequently involved. Destruction of the pyramid is rare—usually symptoms of impairment only are seen. Cerebellar irritative phenomena may sometimes be observed as distant effects of lesions in the pons and medulla. Varying in location and size pathological processes in the pons and the medulla may give rise to such a bewildering array of clinical pictures which merge one into another that they almost defy analysis. It is only with the definite delimitation of syndromes, standardized nomenclature and further study of the anatomical and physiological structures involved that we will be able to shed light on this absorbingly interesting region and its lesions.

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SEGMENTAL TROPHIC EDEMA OF CEREBRAL ORIGIN

By ALFRED GORDON

PHILADELPHIA

(Read and Patient Exhibited at the Meeting of the Philadelphia Neurological Society, March, 1927.)

Quincke's¹ description of circumscribed edema is a classical entity. The chief characteristic features are: rapid appearance and disappearance of swelling in one place and its reappearance in other places. The condition is acute in development and may involve any part of the body including the mucous membranes.

Since Quincke a number of observations have been made on the same malady and other characteristic features were found. Meige² came forward with descriptions of localized edemata but of a chronic nature and he called this affection "trophoedème chronique." In both affections there are no cardiovascular disorders; but there are secondary phenomena which indicate a possible influence of the nervous system.

As to Quincke's acute form, it may have a familial character. A number of writers observed it in several members of the same family. Meige observed it in four generations of eight patients, Lannoy in three generations of four patients. It has also been observed in cases of alcoholic intoxication, in saturnism, in cases of dysthyroidism, in the course of infectious diseases, finally in cases of epilepsy and in organic diseases of the central or peripheral nervous system. Féré and Rad, Schlesinger, Cassirer, Roth, and Marinesco published a very large number of cases of acute and chronic localized edemata in the anesthetic areas of lower or upper extremities during the evolution of syringomyelia.

When both types of the affection (Quincke's and Meige's) are compared from the standpoint of the seat and the course of the edema, we find that in both it may occupy a whole limb, or a segment of it, in the upper as well as in the lower, on the face, on the eyelids, in the gross articulations. The records published in the literature show that there are cases with transformation of the acute cases into chronic ones and cases with simultaneous coexistence of the acute and

¹ Monatschr. f. praktische Dermat. Juli, 1882.

² Nouv. Iconog. de la Salpêtrière, Décembre, 1899.

chronic forms in the same individual. It seems therefore evident that both types are dependent upon the same pathogenetic factor and the only clinico-pathological difference is found in the fact that while in the acute form the deeply seated edematous fluid is rapidly absorbed, in the chronic form the fluid persists but the surrounding connective tissue is hypertrophied. The common symptom in both is the edema.

The pathogenesis of circumscribed edema of Quincke's or of Meige's type is difficult to establish in a definite manner. If we take into consideration the cases in which, for example, ingestion of a sweet or else of an acid substance (see Cassirer's *Vasomotorische Nevrosen*) produces localized edemata, or the cases in which application to the tympanic membrane of cotton moistened in chromic acid produced circumscribed edemata in the tongue, forehead, hands and the glottis,³ there can be no doubt that we are dealing here with reflex phenomena depending on the nervous system. Besides, in a number of such cases morbid hereditary features referable to the nervous system have been observed. Furthermore literature is abundant with examples of compression of the spinal cord with radicular pain in which circumscribed edemata were observed. (Cassirer). Dejerine and Thomas in their work on *Diseases of the Spinal Cord* described edemata distributed over the paralyzed regions, appearing and disappearing. In syringomyelia the sensory and the trophic disturbances, such as "main succulente" correspond to the anatomical predilection of the disease.

Edemata are sometimes observed as a consequence of disturbed venous circulation, as for example in hemiplegias, myelitis, progressive muscular atrophy, but in all such cases the edema is always accompanied by cyanosis, a condition which is not observed in the circumscribed edemata under discussion.

Locally the fluid accumulated in the network of connective tissue of edematous areas is the result of stasis or of an obstacle in the interchange of normal elements between the capillary and the lymphatic systems; an increase of lymph in the connective tissue must follow. In Quincke's form of edema the frequency of its occurrence will eventually result in hyperplasia and hypertrophy of the connective tissue. This is precisely what occurs in the chronic form of edema described by Meige. That the edematous phenomenon is dependent upon the nervous system can also be seen for example from the following experiment: an electric current applied to the

³ Lewis. *New York Med. Jour.*, 1898, p. 494.

lingual nerve produces a vasodilatation and an enormous accumulation of lymph to such an extent as to produce a circumscribed edema of the corresponding half of the tongue and an increase in size of the corresponding lymphatic ganglion.⁴ Physiologists have also demonstrated experimentally an increase of lymph through stimulation of the chorda tympani, but an arrest of the process followed injections of small doses of atropin. At this juncture it is not without some interest to recall some observations in which circumscribed edemata are sometimes accompanied by salivation, perspiration, and lachrymation. Moreover, Ranvier placed a ligature on the veins of the hind limbs of an animal and could not obtain an edema except when he cut at the same time the sciatic nerve. Roger and Jossé produced an edema of the ears in a rabbit only when after having ligated the three efferent veins they extirpated the superior cervical sympathetic ganglion. All these facts point to the strong probability of an active participation of the nervous system which has a controlling influence on the secretion of the lymph. The experimental data just mentioned plead particularly in favor of a disturbance in the domain of the sympathetic system. For a practical confirmation of the latter may also be mentioned the case of Leriche⁵ in which a periarterial sympathectomy made a localized post-traumatic edema disappear in 4½ hours after the operation.

On the other hand the distribution of the edema, namely the segmental limitation of it (wrist, hand, leg, thigh, etc., etc.) indicates a metameric character due to an anatomical or functional involvement of the medulla or of the spinal cord besides the participation of the sympathetic system. In corroboration of this contention the above mentioned organic diseases may be recalled. In syringomyelia Cassirer (loc. cit.) observed edemata confined to the anesthetic areas while the rest of the body was intact. Not only trophic edema of a hand but also of a foot (Crocq) was reported in cases of syringomyelia. Schlesinger⁶ and Mathieu et Veil⁷ reported cases of tumors in the lumbar and dorsal regions of the cord, and Reinhold⁸ in diseases of the medulla, in all of which the edema under discussion occurred in the corresponding areas.

All these facts seem therefore to plead in favor of the existence

⁴ Luciani. *Fisiologia dell' Uomo*, p. 463.

⁵ *Lyon Chir.*, 1923, XX, p. 814.

⁶ *Beitr. z. Klin. der Rück. u. Wilbertumoren*, 1898, p. 136.

⁷ *Arch. gén. de Méd.*, 1895, pp. 171 et 656.

⁸ *Deut. Ztschr. f. Nervenhe.*, 1897, p. 67.

of multiple series of metameric centers for the secretory function of the lymphatic system and that very probably they are situated all along the bulbomedullary axis which, as it is well known, is anatomically associated with the sympathetic system. Whether these centers are situated in the cells of the columns of Clarke or in the gray matter of the median or posterior portions of the cord as the lesions of syringomyelia or of Morvan's disease suggest, this question cannot be definitely settled. The fact remains that trophic disturbances of an entire limb or of segments of a limb have been observed in various diseases of the bulbospinal axis. When we consider the occurrences



BACK OF HANDS

of edema in association with cerebral lesions, we find only those which develop on the hemiplegic side following ordinarily some time after the apoplectic seizure. In all such cases edema occupies the entire limb involved in the paralysis. The clinical experience as well as experimental physiology concerning stimulation or section of peripheral nerves indicate that in all pathological cases, either spinal or cerebral, the disturbances in the nervous influx have an eventual effect on the molecular equilibrium of the tissues through the variation in vascular tension, in altered oxidation and in osmotic interchanges which are all regulated by the nervous system. In cerebral hemorrhages or softening, cardiac or renal disorders are almost

always present, and it seems logical to admit that the sudden disorder in vascular and tissue equilibrium brought on by the brain lesion hastens the damage which the preëxisting cardiac or renal disorder would have per se produced, and thus localized the trophic disorder on a part of the body which is paralyzed.

In normal conditions a trophic state seems to be the result of a reflex equilibrium of motor and sensory functions. In posthemiplegic edema the abolition of these two functions constitute the chief etiological factor. On the other hand a large number of authors such as von Monakow, Parhon, Goldstein, Preuss, and others admit the existence of trophic centers in the brain, namely in the head of the



FRONT OF HANDS

caudate nucleus, in the anterior segment of the internal capsule, in the internal portion of the lenticular nucleus, finally one author (Gombaut) connects the edema of hemiplegia with the lemniscus and the motor pathway.

Our case shows an unusual example of a trophic edema limited to one hand, presenting all the characteristics of the "main succulente" described in syringomyelia, but which occurred some time (several weeks) after a cerebral attack. The latter consisted not of a hemiplegia, but of a single sensory phenomenon, namely *astereognosis*. There was no trauma of peripheral nerves, nor evidences of a spinal lesion. For many weeks the astereognosis was

the only cerebral manifestation, the edema developed later and quite rapidly.

A. B., sixty-seven years old, while at his tailoring work suddenly saw the cloth falling out of his left hand. After picking it up he observed that he no more could feel that object properly. This occurred in October, 1926. Since then he has been unable to appreciate the form, shape, consistence of any object placed in his left hand. He came under the writer's observation in December. The condition was as follows: There was no paralysis of the left arm, hand, or leg, but when he attempted to extend his fingers, their extension was not as rapid and complete as that of the opposite hand. The patellar reflexes were all normal with a slight predominance on the left side. The motor power of all the extremities and of their individual segments was preserved. The tongue protruded in the median line and there was no involvement of the muscles of the face. The grip of the left hand showed a decided difference from that of the right hand: on the dynamometer the right showed 69 points while the left hand only 30 points. Test for sensations revealed a very considerable involvement of all the deep sensibilities but a total preservation of all superficial sensibilities: Touch, pain and temperature were all intact in the hand, forearm, arm and in the entire left lower limb. Position of the fingers, the muscular and articular senses, were all defective; the compass test also showed gross errors on the part of the patient inasmuch as two points placed on the hand at a considerable distance from each other were taken for one. The stereognostic sense was grossly involved: the patient was unable to recognize with the left hand the form, shape, consistence and the material of which objects were made, and he could not name them.

Further examination revealed arteriosclerosis of the peripheral vessels and a marked accentuation of the second aortic sound, also some dilation of the left cardiac ventricle. Blood pressure was 165 and 70. The eyes presented nothing abnormal except a slight arcus senilis, and there was no hemianopsia. The patient complained of headache and of occasional vertigo. Urinalysis and blood-examination were negative. The patient's previous medical history was free from morbid incidences. His habits were good.

In January, 1927, he commenced to complain of a gradually oncoming swelling of the left hand. Upon examination the dorsum and palm of the hand presented a decided enlargement. There was no discoloration of the skin at first. There was no noticeable pitting. The swelling became more and more pronounced, so that the fingers gradually assumed a flexed position. In two weeks the swelling became much pronounced. The skin became bluish and cool. At present the condition of the left upper extremity is as follows: there is no paralysis and while the grip of the left hand is decidedly weaker than that of the right, nevertheless he can close and open it. Each segment of the limb has good resistance power. There is no pain. Astereognosis of the hand is complete; all

deep sensibilities are involved, but the superficial sensations are intact. The tendon reflexes are preserved. The entire hand is edematous; it reminds one of the "main succulente" of Marie and Marinesco which they observed in syringomyelia. The wrist and the lower third of the forearm are but very slightly enlarged. Because of considerable enlargement of the soft tissue of the dorsum of hand the fingers are placed in a strongly flexed position, and the extension of the fingers becomes difficult and is invariably incomplete, so that any manipulation with the left hand is impossible.

Discussion. To sum up, the affection of our patient consisted at first of astereognosis of the left hand which occurred suddenly in October 1926 and which was probably due to a vascular lesion (because of his arteriosclerosis) occurring in the superior parietal lobule (or in the supramarginal gyrus) of the right hemisphere. It could not be of peripheral nature in view of the absence of neuritic manifestations since the onset of the disorder. It could not be of spinal character in view of the absence of concomitant symptoms in the motor function of the hand. The cerebral character of the affection is seen from the sudden onset, from sudden slight weakness of the hand, from the slightly increased left patellar tendon reflex and finally from the limitation of the sensory disorder exclusively to the deep sensibilities. To be more precise, the vascular lesion was probably cortical in localization and thrombotic in nature in view of the generalized arteriosclerosis. The chief interest in the present case however lies in the trophic disorder of the hand. On the introductory pages of this paper it was mentioned that localized or segmental edemata may be of acute character (Quincke) appearing and disappearing or else of a chronic character (trophoedème of Meige). It was also shown that the latter may develop as a consequence of several acute attacks, or may be chronic from its incipency. The difference between the two forms lies only in a hyperplasia of the connective tissue which occurs in the second form. In the present case the edema of the hand belongs to the chronic form because of its slow development, because of the thickness of the subcutaneous tissue, the resemblance to a frozen hand, the dryness of the skin, the resemblance of the hand to a fruit engorged with juice (main succulente), the absence of prolonged pitting, finally because of the involvement of the entire contour of the dorsum of the hand from the radial to its ulnar border.

If we compare this trophic disorder with the occasional edemata occurring in hemiplegic limbs we must draw a strict line of distinc-

tion. In the first place in our case there was no hemiplegia, but only a morbid deep sensory phenomenon involving only one hand; while in cerebral hemiplegia the edema occupies the entire paralyzed limb. In the next place the above special characteristics of the edema found in our case are not at all found in the edematous limb of the hemiplegics, namely the absence of pitting, the color, the consistence of tissue, etc.; they are totally absent in hemiplegic edema. Pursuing further our differential analysis, we arrive at the question of pathogenesis.

We have seen above that localized edemata develop not infrequently in neuritic or polyneuritic affections or in traumatisms through the involvement of the sympathetic nervous system. In order to eliminate a periphiheral origin of the trophic disorder in our case, the following tests were made: The oculocardiac reflex and the pilomotor reflex were compared on the two sides. Adrenalin was injected above the edematous area and the frequency of the pulse compared on both sides. Pilocarpin was injected and the perspiration was compared on both sides. Finally the blood pressure was taken on both sides and compared. In all these experiments there was not the slightest difference between both sides. Thus the influence of the peripheral nervous system on the production of the localized edema could be eliminated in our case.

In the general discussion on the pathogenesis of localized edemata on the preceding pages the metameric point of view in connection with the spinal cord and medulla was considered. Applying it to our case, we find that there are no evidences whatsoever of a disease of this portion of the central nervous system. Syringomyelia, myelopathy, hematomyelia, tumors of the cord, in all of which segmental edemata were observed, could be entirely eliminated in our case. As we have already indicated, the sudden astereognosis of the left hand of our patient was characteristically and typically due to a cerebral insult; the localized edema was superimposed subsequently in the same segment of the upper limb.

Considering in conclusion all the viewpoints regarding the pathogenesis of a localized and segmental dystrophy of a limb we are warranted to believe that the affection under discussion occurs in cases of involvement of the peripheral, bulbomedullary and cerebral portions of the nervous system. As to the latter portion particularly, in view of many observations on record we may consider the existence of trophic centers not only in the basal ganglia, in the internal capsule, in the lemniscus and in the motor pathway (see above), but also, as shown in the present case, in one of the sensory cortical

centers, namely the superior parietal lobe or the supramarginal gyrus whose chief function is to control the stereognostic sense. The present case also indicates that this special center does not produce an ordinary edema which is not rarely observed in classical hemiplegia, but a special trophic disorder analogous to those which are observed in diseases of the spinal cord, notably in syringomyelia. "Main succulente" is a special trophic disorder which could be included in Meige's trophic edema, which has its special characteristics (see above) and which is under the control of special centers in the spinal cord, medulla, and, as the present case indicates, also in the brain, notably in the superior parietal lobule. The latter, to my knowledge, has not been described in the literature which, if our information is correct, renders the case unique. The case also suggests this conception that the trophic centers are intimately associated with and perhaps dependent upon the sensory centers. In the spinal cord, "main succulente" occurs, as for example in syringomyelia, precisely in the segment of the limb in which the senses of pain and temperature are involved. In the brain, as the present case indicates, "main succulente" occurs in the segment of the limb in which the deep sensibilities are affected. The study of the present case therefore brings in additional knowledge concerning the pathogenesis of a special trophic disturbance in a segment of a limb, calls attention to its special center in the cerebrum and to its dependence upon deep sensibilities of the same limb.

SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY

THE FOUR HUNDRED AND THIRTY-FIFTH REGULAR MEETING,
APRIL 5, 1927. THE PRESIDENT, DR. GEORGE H. KIRBY,
PRESIDING.

PROGRAM

A CASE SHOWING AN UNUSUAL TYPE OF EXTRA-PYRAMIDAL DEVELOPMENT

S. PHILIP GOODHART, M.D.

(Author's abstract)

The patient, an only child, seven years old, of healthy stock, was born normally at full term. When the child was two or three months old, some inactivity of bodily segments and tendency to keep the hands clenched and arms flexed on the chest was noted. At the age of one year inactivity of the left side was noted. The boy would slump to the left side when propped against a pillow. A mild dysarthria or speech hesitation was noticed early.

At five, without other evolutions noted, disturbance of consciousness associated with motor manifestations of almost constant pattern of the nature of petit mal began. The provocative factor is usually some affective stimulus—a sudden fright, momentary unexpected experience, sudden surprise, etc. The attack is characterized by a mild confusion or clouding of consciousness and by a spiral, rotary movement of the body and head; the body is turned in corkscrew fashion, the left arm is flexed, the right extended; the body usually turns to the left, the head and eyes slowly follow; the pupils are momentarily dilated and fixed. Recovery is sudden and complete. The seizures vary in number from a few to twenty or more daily. Fatigue has an influence upon their recurrence. What is of interest is the gradually increasing influence of the patient's will in preventing or modifying the seizures. By a strong effort he is attaining greater mastery over them; he cannot induce them. There is no subsequent headache, confusion, or somnolence; no aura.

Neurological examination: Cranial nerves including fundi and fields show no changes. The patient is right handed. Posture and gait reveal an absence of normal associated movements, more marked in the right upper extremity, and suggestion of flexor pattern of the latter. There is clumsiness in performance of the left arm and leg, emphasized in all coördinated skilled movements, as walking, skip-

ping, pinning or buttoning garments, handling knife and fork, and in pointing tests. Rapidly alternating movements are poorly performed on the left. Sudden arising from the floor on command, results in patient showing tendency to fall backward and somewhat to the left. There is hyperextension of the left leg at the knee and a gradually increasing tendency to pes equino-varus. On the left side, one suspects some degree of dyssynergia of the simple type as revealed by a mild degree of Gordon Holmes noncheck phenomena; the left knee jerk approaches the pendulum swing. Muscle tone appears normal. The dysarthria is of slight degree and was observed in early years. The reflexes, superficial and deep, are all present and are essentially equal, with perhaps a slight degree of greater response on the left, although the abdominals are also somewhat more active on the left. The plantar responses are flexor. The laboratory tests include blood chemistry and cytology and spinal fluid, all normal. Stereoscopic examination of the skull reveals no abnormality. The I.Q. (intelligence quotient) is 85.

Barany tests (by Dr. Almore): These very carefully carried out show no evidence of labyrinthine or cerebellar mechanism abnormalities. There is, however, a very manifest loss of appreciation for the lower tones of the tuning fork and vertigo is induced with difficulty. Pointing tests are normal in results.

The diagnosis may be chiefly narrowed to one of two sites for its pathology, namely, the cerebellum or one of its peduncles and a more diffuse pathology of the extrapyramidal mechanism.

Tonic or cerebellar fits vary sufficiently in type to justify one in considering their presence in our case. However, even in unilateral cerebellar fits, while the tonic spasms are more marked on the ipsilateral limbs, the opposite ones do not remain unaffected. The former become rigidly adducted to the trunk, while the contralateral are abducted. The spiral turn of the trunk, of the head and eyes, is away from the side of the lesion, that is, toward the sound side.

The fragments of decerebrate rigidity, the loss of normal automatic associated movements of the right arm, the gradually increasing striatal pattern of the left lower limb, the defects, apparently of congenital origin of the posture or pattern mechanism, lead me to regard abiotrophy or a developmental defective extrapyramidal system as the basis for the symptoms in this case. It appears not improbable that, as a more intricate mechanism with its demands for function developed, a failure of the necessary tracts may be the cause of the maladjustment, causing lower centers to remain uninhibited by a proper controlling mechanism. The influence of affective stimuli in "setting off" the seizures, would rather suggest implication of the basal ganglia of the forebrain.

Medication has had no favorable influence; luminal has induced some somnolence, increased the coördination, without influence to any extent upon the attacks.

Discussion: Dr. Walter Kraus said: The petit mal attacks which Dr. Goodhart has mentioned interest me very much. These

attacks seem similar to the static fits in epilepsy described by Hunt. This kind of seizure is probably closely related to what Wilson commented upon in lenticular disease, that is, a very certain degree of muscular weakness which is not accounted for by involvement of the pyramidal tract, usually believed to be the cause of muscular weakness. The uncertainty as to the site of origin of such weakness is emphasized by this presentation in that Dr. Goodhart has not stated definitely whether the petit mal attacks are of midbrain, striate, or other origin.

Dr. Abrahamson said: I have seen such attacks and such positions in postencephalitic patients, especially those affecting the lenticular ganglia. It is very difficult to call these attacks petit mal, or to label them at all. I think the best is to call them postencephalitic or chronic encephalitic attacks. The slight cerebellar symptoms I think are secondary. The main brunt of the disease in this case is borne by the lenticular ganglia. There are many encephalitics, especially in the very young, who show peculiar cephalogyric and oculogyric movements. The whole attitude of the body and the long course of the disease impress me that we are dealing with a postencephalitic condition. From the fragments of the history that I obtained this thing apparently came on after birth, a very distinct period after birth.

Dr. Goodhart replied: The attacks are only of two years' origin, but the patient was noticed first about two months after birth.

Dr. Abrahamson said: I got the impression that it is a postbirth condition, and that a progressive change has taken place in the lenticular ganglia, and this progressive change is still going on.

Dr. Jelliffe said: Let me ask a word concerning an evident thalamic overresponse in the facial musculature; also about the right arm and left leg distribution. Does Dr. Goodhart postulate multiple lesions, or one? If the latter, where is it?

Dr. Goodhart (closing): It occurs to me, in addition to what Dr. Jelliffe noticed, and which I did not observe before, that over-affective unilateral reaction of the facial musculature would coincide with what I have mentioned as associated with thalamic influence; that surprise and any affect stimulus seem to be the inciting cause of these attacks.

Dr. Kraus's remarks are very pertinent, in that in spite of the fact that the pyramidal tract is not involved, there is a definite disturbance in voluntary control and in motor power, and while it probably is due more or less to disturbances in coördination, one finds definite reduction on the left side.

The reason why I was disinclined to regard Dr. Abrahamson's suggestion of postencephalitis as a basis was the early beginning of the motor disturbance, and its insidious onset. Whether something else has occurred to bring on these petit mal attacks of the past two years I do not know; but to me it seemed more likely that we were dealing with some abiotrophy or lack of development of the extra-pyramidal system.

THYMERGASTIC REACTIONS: AND A CONSIDERATION OF CERTAIN TYPES OF HYPOCHONDRIACAL HYPOTHYMERGASIAS (HYPOCHONDRIACAL DEPRESSIONS)

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(By Invitation)

(*Author's abstract*)

Only the conclusions of the paper as read are given here. The full paper will be published at an early date.

In the presentation I have attempted, first, to emphasize a thoroughgoing experimental empiricism in psychobiology and psychopathology—an empiricism which elevates psychiatry to a real scientific discipline in that it arranges all cogent facts in sequence, and exacts of these factual sequences only two rules: (a) that they will regularly lead to the same outcome; (b) that these sequences prove their cogency by possessing predictability or experimental reproduction. This position refuses to deny the autonomy of the facts of psychobiology because they are not reducible to the facts of the physical sciences.

Second. I have tried to point to an experimental attitude and approach to the study of normal and pathological emotional states as well as the need for studying these reactions as total organism responses to the situation.

Third. I have presented a group of cases showing marked hypochondriasis as the main presenting symptoms in a group of cases which are fundamentally emotional reactions of circumscribed duration; the clinical recognition of these states comes from a study of the "mechanics" of the reaction or behavior pattern.

Fourth. To represent this objective or experimental empiricism in psychobiology, and the need for accepting *all cogent facts* in the study of the emotional reaction, I propose the adoption of the Meyerian term "thymergastic reactions," for the general group of pathological emotional disturbances.

THE VALUE OF COMBINING METHODS OF TREATMENT IN THE PSYCHONEUROSES

THOMAS W. SALMON, M.D.

(*Abstract*)

Attention is called to the desirability of combining the three methods of healing in the use of psychotherapy which would lead to an increase in the success of this method of treatment. Another enormous advantage would be that the psychoses, diseases which are avoided by the three great psychotherapeutics advocating the three

methods, might sometimes be benefited by their ministrations. There are advantages, however, much wider than these, advantages to those who are engaged in the work itself. Unusual opportunities are opening before the psychiatrist in the schools, prisons and colleges. If we fail in the prison and the children's court and in the college to modify the thinking and the feeling and the conduct of the people brought to our attention, we should abandon the field to someone else. It is in this new field of effort in psychiatry that the combination of the methods of treatment is to be most required. One of the best illustrations is to be found in the training of children. A special technic must be evolved. Before this combination of methods can be effected there must be facilities for joint efforts. The patients are dealt with in series at the clinics and afterwards, if this is followed by a conference, there is an opportunity for the combination of methods. No psychiatric clinic is efficient or complete unless it has a place for the employment of the main methods of psychotherapy. In addition to that are needed more tolerance, greater frankness as to negative results and the adaptation of a broad spirit of purpose, rather than the carping, critical attitude of a special point of view.

Discussion of the two papers as read: Dr. Goodhart said: Among the many points suggesting discussion is one of interest to us as neurologists and psychiatrists; I refer to the nomenclature and attempt at classification suggested in the title of Dr. Hohman's paper. The term "thymergasia," as I recall, was introduced for broad classification by Dr. Meyer. Before we can understand each other, we must speak a common language. Neuropsychiatry has long been suffering from just this lack of conception of our groupings; every now and then new terms are introduced or variously and loosely used. Neurology is undergoing a thorough housecleaning in that respect, and the work of a joint committee establishing a rational nomenclature will soon be presented. The same should be done in psychiatry. The question of etiology, therapeutics and prognosis should not rest upon such a classification as that which is represented by the affective psychoses—manic-depressive or so-called benign psychoses as distinguished from the more malignant, as represented by dementia precox. A much more rational and comprehensive basis would be rather an analysis of the life reaction of the individual; I have no doubt that all of us see schizophrenic thinking, oftentimes in the so-called functional, the neuroses and psychoneuroses, and certainly in the frank depression psychoses. Dr. Hohman has broadly intimated this as a principle in his analysis of the psychoneurotics. It is only by a study of the life reaction of the patient that we may form some idea of the outcome. By the life situation of the individual I mean what he has from his progenitors, what his own life experience has been, what has happened to him in the course of his acute illness and its immediate exciting cause; and of no small importance, what influence will his recovery have, or does he think it will have, upon his future life. As Jung has pointed out, the psychosis, and I think one might also say, the psychoneurosis, may be the saving, the beneficent turn in the patient's life; it may place

him where he belongs, indeed it may be the fulfillment of a long suppressed subconscious desire and give opportunity for the expression of latent potentiality. Indeed, only through this psychopathologic experience may the individual really "find" himself. In the early years of my practice, a most exemplary demonstration was brought under my observation and study. To a perplexing and profound problem concerning his future a minister in a small town reacted by a complete amnesia; he might have suffered a psychoneurosis or indeed a psychosis. Instead, however, his conscious life was pushed in its entirety into the subconscious. The new personality emerging from the subconscious revealed the suppressed hopes, ambitions, desires, moral and strictly intellectual characteristics of a personality very different from the former active personality. A study of the new personality enabled recasting and readjustment, so that an entirely new life activity was furnished. The patient was freed from the limiting bonds of clerical activity and a new field of endeavor was given him. I am satisfied that the patient was on the brink of a mental dethronement and that the pathological reaction established him, so that he could live out the life that had long lingered as a developmental necessity for his life work.

Dr. Salmon has made a most commendable plea for a unity of purpose and has with characteristic clearness shown us the way.

Dr. Brill said: Dr. Salmon, in his genial personality and gentle way of presentation, views the situation as it really is. There is no doubt that such a state of affairs exists, the various schools are at war with one another. But Hobbs, the philosopher, made this clear long ago when he said that we are all at war with one another; yet it does sound surprising to hear that psychotherapists do not behave differently. Dr. Salmon himself is not against controversy; he thinks that it sharpens the mind, and I agree with him; and still I feel that he is perfectly right in deploring the fact that there is no coöperation among schools which strive to accomplish the same purpose. Freud himself said long ago that every physician practices psychotherapy, whether he knows it or not; I know that he always took a broadminded view of the situation and never displayed any objection to any other methods. It is the other schools who always voiced objections to his methods. I did a lot of hypnotism and used persuasion and reëducation long before I ever heard of Freud, but I found later that psychoanalysis gave me more understanding than the other methods. Freud shows us the actual dynamics at the basis of symptoms. I believe that we were really the first behaviorists, with all due regard to Dr. Watson here, for psychoanalysis teaches us that no two cases are alike and that every case has its own individuality. That is the reason why I prefer Freud's method of psychotherapy, but I see no objection to any other schools. As a matter of fact, not every case is accessible to psychoanalysis, but personally I feel that even in such cases the psychoanalytic approach is by far the best.

When I heard Dr. Hohman's very interesting and well arranged presentation, I was reminded of an Italian proverb, "*Si non è vero è ben trovato*," which means that even if it is not true, it sounds well.

Dr. Hohman described the human being as a fine working piece of machinery to which one can add this device or that device, and can keep on modifying and changing these devices *ad infinitum*. The only difficulty presented in such concept is that a human being does not act in this way. A human being is adaptable and flexible, and if anything happens to disturb him, he does not always react in a definitely expected manner. I could match Dr. Hohman's ten cases with ten equally well worked out, and give my own interpretation, and you would surely find the differences of opinion which Dr. Salmon has so earnestly deplored. Everything Dr. Hohman told us this evening is undoubtedly true according to his view of his cases; but I feel that his ideas are too mechanical. We do not know enough about the human emotions to speak in terms as definitely as he presented. What he says about the psychoanalyst's interpretation of the psychoses is not quite true. There are many psychoanalysts, just as there are many psychotherapists, and not all of them think that just because a certain psychosis does not react to psychoanalytic treatment there must be an organic lesion. We do not know this. Some believe it to be so. Bleuler takes this view; but Bleuler the psychiatrist, although feeling that without Freud there would be no psychopathology, has his own ideas about the structure of certain psychoses. We agree with Dr. Salmon that for some people it is not necessary to take everything that Freud offers. One is privileged to take what he wants, one takes what one can digest. Some of us follow Freud in all our cases, I do this because I find that I can harmonize his theories of the psychoneurotic and psychosis with my views of life, that is, with the views of life I have gathered by studying normal and abnormal people. I can understand my cases when I look at them in the light of psychoanalysis, whereas the other methods do not offer me the same opportunity.

I would like to discuss some of the other points made by Dr. Hohman, but I hesitate to take them up lest I should make some mistake. I would prefer to read the paper first, and then discuss it. However, I feel that Dr. Hohman's paper is a distinct contribution. I cannot accept his classification. I believe that psychiatry now has a fairly good working classification in Kretschmer's cyclothymic and schizothymic or in Bleuler's modifications of Kretschmer. The cases which Dr. Hohman cited as manics I would say were schizoids, or preponderatingly schizoid. Some probably belonged to Bleuler's schizoid manic type. I cannot agree with Dr. Hohman that heredity and constitution count for nothing, as much as I believe in environmental influences. I have observed a number of families in which the parents were both markedly burdened by heredity, schizoid and syntonik respectively. In one of them there are four children, the oldest of whom I have known for sixteen years. This boy is distinctly manic in make-up and continued to show a syntonik behavior until he was about fourteen years old when he suddenly changed into schizoid manic. The second one is distinctly schizoid, and now, at fourteen years, she is very schizoid in make-up. The third one is again very manic, while the fourth, a boy of eight years, is also manic. I have closely observed these children with the parents who

are intelligently interested in the problem and I have no doubt about the constitutional factors. There is no question that there is such a personality as Kretschmer's schizoid type and that this personality reacts in a schizoid way throughout life regardless of environment. The same may be said of the syntonic types but from schizoid A, who is an adjusted personality and who accomplishes a great deal in life, to the schizophrenic A there are a great many transitions.

Dr. John B. Watson (by invitation) said: I wish to congratulate Dr. Hohman on a very clear and brilliant paper. I was interested to hear him take as conservative a position as he did on the question of the fundamental constitution of the individual. I know he took the only scientific position that is possible, but I do want to say that the behaviorist is after this constitutional factor. I think he has gone far enough in his experiments and conclusions to deny the existence of such a factor. I would like to see one good case shown by the biologists or the psychoanalysts or the psychiatrists where the facts cannot be explained upon some other basis than that of the so-called constitutional factor. It is perfectly possible to take babies who have been brought up to behave in one way and after six weeks train them to behave in another way. When I speak of children, I mean children too young to go into the hands of a psychoanalyst, and in general too young to get into the hands of any of the psychiatric clinics. I refer to children a year and a half, two, and two and a half years old. We can almost make and remake them at will, and in a very few weeks' time. Our proof is not very definite, but I would like to go on record that the behaviorists can get along without assuming any mystical constitutional factor. I believe that the human being is made, not born.

Dr. George Draper (by invitation) said: It is a very great pleasure for me to hear Dr. Watson for the first time. I am interested in his work and am glad to see that he bears all the earmarks of having descended, like the rest of us, from preceding generations. I must say that it has been very difficult for me, as an internist, quite out of place here, to escape the belief that there are inherent susceptibilities in the human being which renders him a specific reagent in disease-producing mechanisms. Now I cannot see why there is any great difference between the psyche of a human being and the liver, for example. Certainly people who develop pernicious anemia are very peculiar people, quite different, not only in their morphology but in their psychology and in various aspects of their metabolism, from other people. The recent work on the liver in relation to pernicious anemia people, it seems to me, is opening a vista of the most astonishing sort, pointing directly to a lack in their physical organization of some substance which is essential to normal development of the blood-forming organs. It is a little difficult, in view of an example of this sort, to rule out, at least from the physical body, the question of forces inherent in heredity. Certainly the racial distribution of disease is also very suggestive. Here again the pernicious anemia is illuminating as we know that pernicious anemia is almost entirely limited to the northern peoples. It is a very curious thing that the livers of people of these

racers seem to lack something which the livers of the more pigmented peoples possess. It is hard to think of human beings except as total organisms which might be spoken of as "mind bodies." Certainly if there is no doubt of the inheritance of physical and physiological characters, it is logical to anticipate some hereditarial influence which is expressed in characters of psychic pattern.

Dr. Foster Kennedy said: Sir Thomas Browne, who had more wisdom than we have knowledge, warned us not to be proud that we have dignity, modesty and contentment, for all of these lay in the egg, before we were! So Dr. Watson disbelieves in heredity (!) and feels that a human sperm and ovum joining anywhere else than in the uterus would not necessarily produce a human animal.

Did Dr. Watson ever hear of an experiment of the Glasgow County Council, about 25 years ago, who decided to take the slum foundlings of Glasgow who previously had been kept in foundling hospitals and farm them out in the hills and islands of Scotland? These children were waifs from the Glasgow slums, which are among the worst in the world, and their stock was of the poorest. They were put in as good an environment as any child could be brought up in, on small farms of "four acres and a cow," with fine peasantry as foster parents, and in fifteen years they had polluted the countryside.

Dr. Watson said: I would like to ask Dr. Draper if he is familiar with Child's work on the effect of temperature, pressure, etc., upon the developing organism? Whether he thinks that if the egg and the sperm, after being united, grew up in any other place except in utero, we would have such a thing as an arm, or a leg, or even a liver? I think it is extremely doubtful whether we would have anything which would take on the semblance of a human being. We are going to have to revise our conception of heredity—even of the inheritance of bodily shape, form and size.

There is an experiment going on in Germany which I have not seen yet. Children from very poor stock were taken away from their homes and reared and cultured under the best behavioristic conditions—as far as they have got to that in Germany at the present time. The results I hear are so satisfactory that the officials in charge are suppressing the facts for fear they may injure the home!

Dr. Jelliffe said: Every time I attempt to discuss such wide papers, papers of such depth and extent, I pass into a temporary psychosis. If I were wedded to the process of classification, which as you all know I am not, I would call it "acute confusion." I watch my thymergastic reactions: my pulse is 82. A full dinner has been responded to by a contracted stomach, more or less with a certain amount of relief. Dr. Hohman assures us those thymergastic reactions which are relieved by somatic expression offer a good prognosis, so possibly before I sit down I may have partly recovered from my temporary psychosis. In looking at Dr. Salmon's calm, quiet and peaceful face, and listening to his careful presentation, I would have had little necessity for violent thymergastic reactions because I agree with him so thoroughly. Catholicity is to be practiced as well as preached, and there is no necessity for any doctor to call a man a

"quininologist" because he happens to use quinine for malaria, or to call him an arsenicist because he uses arsenic for anemia. There is no necessity for calling a man a "psychoanalyst" because he might analyze this patient, or a hypnotist because he hypnotized that one, or a pedagogue because he may attempt to reëducate a third. Human beings do not need labels like canned goods on the grocer's shelves. So far as what Dr. Salmon tells us, I am in absolute agreement. We need more catholicity; we need more charity; we need more kindness; and we need more of what Dr. Kennedy has reminded us of in his reference to Sir Thomas Browne.

Coming more specifically to Dr. Hohman's contribution, it seems to me it is quite undesirable in a way to make these antitheses so striking; antitheses between constitutional and dispositional factors, except insofar as it may be advisable to point out wherein an unsuccessful approach from the constitutional side or the same from the dispositional side may lead us into very serious breaches of that balancing of judgment which we have been told about. There are a number of points Dr. Hohman discussed, which are due to the persistence of this tendency to destroy the other side. From the standpoint of logical determinism, I cannot see wherein (in the state of the paranoid trend of my psychosis), we can avoid applying the strictest logical criteria to the working out of a hypothesis, and I cannot understand Dr. Hohman's implied objection to hypotheses if I heard him correctly. We all use hypotheses. They begin as fictions, as Vaihinger has reminded us. I have spoken frequently here of the value of the suppositional point of view, as of regarding practically everything in logical terms as pure fictions. If the fictions work then we may build up hypotheses. If the hypotheses work, then we may build up theories, and if the theories work, then we may build laws. So we get a series of logical steps which it seems to me Dr. Hohman has in a certain sense overlooked, because he has denied the felicities of classification, and yet he has told us about "groups" and certain patients that were "allied," thus in spite of himself he is possibly committing the logical fallacy that he is deploring in his paper. I am in sympathy with him that the accent has been far too strong on the constitutional and hereditary factors in our attempts to understand disease. I agree with him that such attitudes of mind constitute serious barriers to the kind of empirical study that he is contemplating. Every tub stands on its own bottom. Each case has its own pathology; therefore we have to be empirical; but on the other hand, there is the necessity of grouping, and were it not for the faculty of making what we call classifications, why then we would do a lot of wind-jamming, which I fear I am doing myself, in diffusing a situation so widely that it is impossible to bring it together, and I therefore close with just a reminder, since we have had a little Latin and a little Italian, of a little Greek. You may recall Plato's discussion with Protagoras, where we find the two attitudes of mind which Dr. Hohman has very nicely portrayed; the mind of Protagoras the empiricist, and of Plato the absolutist; Protagoras who insisted that man was the measure of all things; truth and reality were to each as they per-

ceived them. The Platonists had their absolutes, as their modern followers have their "disease entities"; they regard "names" as "things"—with Dr. Hohman I am on the side of Protagoras.

Dr. Monroe Meyer said: While Dr. Hohman presents himself as the representative of a model empirical scientific discipline, it seems to me that he betrays, at the same time, a certain degree of lack of knowledge of historical facts concerning a scientific method that he is disposed to criticise. Dr. Hohman appears inclined to imply, if not directly to state, that psychoanalysis is essentially a dogma. Further, he evidently feels somewhat disparagingly toward what psychoanalysts have contributed to the solution of the problem of the psychoses. Psychoanalysis has been constantly modified by Freud and his school as new observation and discovery permitted. Twice in the history of psychoanalysis Freud literally tore up his own theories with his own hands. I refer to the theory of infantile sexual trauma and to the theory of libido-anxiety conversion. Freud did not hesitate to subject both these theories to radical revision when fresh facts so necessitated, an attitude which is anything but dogmatic. As regards psychoanalysis and psychiatry, I refer Dr. Hohman to Dr. John Rickman's excellent survey of the subject in the last number of the *British Journal of Medical Psychology*, a perusal of which will, I believe, leave him willing to concede that psychoanalysts have, perhaps, after all, thrown some light on the issues obtaining in some of the psychoses.

Dr. Oberndorf said: Dr. Salmon's paper emphasizes the coolness which the various schools of psychiatric approach formerly assumed to the revolutionary teachings of Freud, and yet I think that Dr. Salmon himself might be willing to admit that both the suggestor and the reëducator of to-day are very largely indebted for a more rational and effective application of their methods to the psychological mechanisms developed by Freud and employed by them more or less constantly, consciously or unconsciously. Dr. Hohman himself, notwithstanding his opposition to the psychological approach, uses the Freudian nomenclature in his paper quite frequently. The main difficulty of combining methods of treatment in psychoneurotic conditions, as suggested by Dr. Salmon, rests in the vitally different aspects of approach by the three groups of psychotherapists mentioned by him. The analyst with his primary aim of having the patient do most of the work, cannot very successfully depart too far from that position. I agree with Dr. Salmon that it is desirable to avail oneself of all three methods, and others as well, but they cannot be combined by one man very effectively. The greatest advance will come when we are able to determine more accurately than to-day just what type of case is most suitable for the psychoanalyst, and which is best referred for treatment by other methods. It is distinctly disadvantageous to treat one case by a combination of methods, but preferably to refer a particular case to a particular expert in the type of therapy best suited to the individual and his disease.

Dr. Hohman (closing) said: I am sorry to be the cause of so much discussion, and I cannot possibly answer all the criticisms,

but I think there is one thing which is the crux of the matter. Dr. Jelliffe says I object to classification. Nothing could be further removed from my thoughts. There must be classification, and it serves a very important purpose, and I should be sorry for myself if I were not able to see similarities between cases of similar sorts. It is a classification which has as its presupposition the existence of a disease entity, that is a specific pathological process, which I object to. I described a group of cases which had certain common features of reactivity, and these I called hypochondriacal reactions. My objection is not to calling them by a name, but by assuming that a special disease process lies behind them. The question of how emotional reactions can come, without a constitutional factor, to be what we finally call manic-depressive insanity is a thing which I wished to speak about. To illustrate the fixity of psychologic patterns I bring up the question of language mechanism. The particular language which an individual speaks is wholly due to environmental factors. Whether I speak German or English is purely dependent on which environment I grew up in, and that particular language becomes so structuralized in myself that if I tried to shelve that language after my twelfth, and certainly by the twentieth year, I could not do so. I believe we never eradicate the original mechanisms which we laid down in the first years of life. We can never eradicate the traces of the original language. That is, a pattern, conditioned from the outside, is woven into the structure of the individual. That is the type of fixity of psychological patterns which I mean. I quoted experiments of Dr. Watson which show easily we can build up and tear down emotional patterns. It seems to me from the therapeutic point of view that we ought all to realize the things that are modifiable, especially since experimental evidence is forthcoming that we can alter these very patterns which look as if they might be hereditary.

PHYSICAL CONSTITUTION AND GENERAL PARALYSIS

H. A. BUNKER, JR., M.D.

(*Author's abstract*)

The present study represents an attempt to approach from the standpoint of the morphology, or physical constitution of the patient the problem of the *raison d'être* of general paralysis. The latter is a problem of some obtrusiveness, for the reason that a situation wherein a small minority of syphilitic individuals fall victims to neuro-syphilitic disease of the parenchymatous type, while the overwhelming majority of syphilitics escape, necessarily challenges inquiry into what it is that underlies this very notable difference in the reaction on the part of different individuals to syphilitic infection.

There are two observations which are of primary importance in relation to the natural history of general paralysis. One of them is that during the first months of syphilitic infection, invasion of the central nervous system, as measured by the presence of spinal

fluid abnormality, takes place in at least one-third of all patients; while in a small minority of these—perhaps some 5 per cent—the spinal fluid changes are intense, persistent, and resistant to anti-syphilitic therapy. It is very possibly from among the latter individuals that the future paretics and tabetics are recruited. The second observation, which we owe to Joseph Earle Moore, is that, whereas in *early* syphilis the incidence of spinal fluid abnormality is the same in women and in men, and in late syphilis the same is true as regards men and *nulliparous* women, the incidence of spinal fluid abnormality is definitely lower, in late syphilis, among women who have had several pregnancies subsequent to infection; as though pregnancy, and especially the occurrence of multiple pregnancies, conferred a material degree of protection against serious syphilitic involvement of the nervous system.

Since Dr. Draper, among others, has demonstrated in various instances, that a predisposition to certain diseases may be reflected in the morphological or anatomical characteristics of the subject, it seemed reasonable to ask, if paretics are by chance a different kind of individual from nonparetics, whether this difference might similarly be reflected in the physical make-up of these two sorts of individuals. We have therefore carried out upon a series of 100 male cases of general paralysis, and in addition upon a group of 64 supposedly normal male subjects intended to represent a random sample of the general population, a series of standard anthropological measurements consisting altogether, in accordance with the technique employed by Dr. Draper, of some 49 body measurements, together with 44 indices or ratios calculated from various pairs of these measurements.

Classifying our material in the manner of Kretschmer, we found that 69 per cent were of the so-called linear type of physical habitus (asthenic, asthenic-athletic, or athletic), and 25 per cent of the lateral type (pyknoïd and pyknic). This is in agreement with the findings of Gründler, published since the present study was undertaken, of whose 80 male and female paretics 69 per cent were of the linear type and 20 per cent of the lateral type; and is in definite contrast with the normal control group of 118 reported by Gruhle, of whom only 42 per cent were of the linear and 34 per cent were of the lateral type.

With regard to the results of the anthropometric part of our study, we believe we have worked out a certain number of anatomical differences between paretics and nonparetics which appear to be significant differences—*i.e.*, they appear not to be merely chance differences. It would seem, then, that syphilitics who develop paresis are in some way a different kind of people from syphilitics who do not; and what is here noteworthy is that the difference between them should be reflected in a number of anatomical features, some of which gave expression to this underlying difference in a higher degree than do others.

Discussion: Dr. George Draper (by invitation) said: I think this is a very interesting and exceedingly painstaking piece of work. There is no question that the paretic is a different person from the

tabetic, and certainly from members of other disease groups we have seen. I am not sure whether one can safely use a so-called normal control group because of unexpressed disease potentialities. One may, for example, belong to a given disease type and never develop the disease because one chances to escape the particular menace to which he is susceptible. There are, however, many other things about the paretics which cannot be measured, but which differentiate them quite distinctly. About sixty years ago a worker in Germany named Nacke made a morphological study of the paretic and the tabetic and brought forth a large amount of evidence to show that the paretic belongs to what is now commonly known as the syntonie or pyknic type. Consequently I was surprised to find that this group was largely of the asthenic type. Notwithstanding these conflicting observations there is no doubt that persons with neurosyphilis are quite different from those who have vascular syphilis, for example. Neurosyphilitics are rather of the hairless type, have a smooth skin and rounded contours, and most of the paretics I have seen are of the thick-set type. Dr. Bunker's observation on this point is interesting. In the study of constitutions it seems to me that dependence on mensuration alone is not wise. Emphasis on pure morphology, particularly osteology, is not sufficient. Nevertheless, there are certain very obvious morphological characteristics in paretics which make it pretty clear that the subjects of paresis are different from those who develop other forms of syphilitic disease.

Dr. Hyslop said: It was four years ago that Thomas Davis published some statistics bearing on the constitution of the paretic. His conclusions were to the effect that paresis is more common in the pyknic type, and if paresis occurred in the sthenic type it ran a more benign course than in the asthenic type. I wonder if you have found reason to refute this tentative conclusion of Davis, and whether in your experience paresis does run a different course in the asthenic type than in the pyknic individual.

Dr. Jelliffe said: I do not think there is a doubt that the problem is interesting, and that we need all the light we can get from every point of view. It just so happens that I have been thumbing over rather rapidly the last edition of Kraepelin's "Psychiatry" (9th edition, second volume), which has just appeared. You know with what care Kraepelin has been working on that particular aspect of the problem. Those of us who came into contact with him during his trip to America know how very keen he was in testing out the hypothesis of Daraschewicz, *i.e.*, that people who had been vaccinated were those who developed paresis. They conceived there was some intimate relationship between skin metabolism and brain metabolism, which seemed more or less likely. There might be some relationship between the skin susceptibility and skin immunology and the capacity for involvement of the nervous system and more particularly of the parenchyma of the cortex. You all know that both Kraepelin and Plaut came to negative conclusions, and could establish no relationship between vaccination and the possibility of paresis. I want to ask Dr. Bunker if I heard him aright when he drew a certain inference about the comparative proportion of the occurrence of

paresis in women and men, whether he took into account the comparative amount of luetic infections in women and men. I should like to know whether his figures represented a proportionate comparison or not, because it is perfectly well known that the amount of infection in women is much less than in men, so we expect to get much less paresis in women than in men.

If I am right concerning the figures, there is an interesting fact that the length of the humerus might account for the length of the span, and the length of the femur was increased. Here increase in the proximal bony structure is evident. Can they possibly be correlated with muscular situations? In response to certain muscular activities a reaction in the bony structures occurs, and on the basis of some unknown unconscious factors with reference to the utilization of the strong muscles, as it were, of the trunk, might there be some relationship between muscular libido and change in bony structure? What is the susceptibility for the cortical structures to be involved? It has frequently been said that the people who do not use their brains, as the nomadic Arabs for instance, do not have paresis. This general notion lies at the bottom of the "Syphilization and civilization" slogan popular for many years. It has remained for many careful studies to show how false such a generalization was. At any rate, the whole problem sums itself up that there are differences in constitution or disposition that determine the parietic reaction. To determine what these differences may be is a research problem. Possibly it lies in an inter-relationship between constitutional and dispositional factors. The only contribution I can make to this subject is one I made many years ago. It dealt with the problem of localization of the syphilitic process in the central nervous system on the basis of certain dispositional factors. It concerned the localization of crises in tabes. There are gastric crises, laryngeal crises and rectal crises, and other definite localizations of the tabetic process in certain parts of the nervous system. The observation I offered concerned a localization factor of rectal crises. To me it was very interesting, namely, that in three cases of rectal crises I had the opportunity to study with a considerable degree of persistence and depth the localization of the crisis was possibly determined by very definite sodomistic fixations in the unconscious life of the individuals. This sodomistic fixation may have had something to do with the tensions in this autonomic segment and thus determined the breakdown at that particular segment.

Whether one can speak of the brain as an organ I do not know. We know the brain is a mosaic of organs, and as yet, complete cytoarchitectonic studies have not been made in paresis; so that accurate localization of the involvement in paresis is still unknown. There have been no cytotoxic studies that in any sense of the word faithfully supply such criteria as the work von Economo has given us demands. Until such studies have been made we do not know enough about the distribution of the lesions in paresis, and therefore cannot correlate them with matters of organ function.

Dr. Joseph Smith: It is difficult to see how studies of this character can elucidate in any definite way the relations between

specific infection and possibilities of later acquiring paresis. It would seem that such items as the length or circumference of the long bones can have no bearing, either on the acquisition of a specific infection or on the localization of the virus, or be a determinant of conditions which in one case will result in constitutional syphilis and in another will affect the parenchymatous structures of the brain. Moreover, were there a possibility of showing the existence of such relationship, it would not tend to clarify matters but would rather confuse the problem, for the question would only be shifted and another raised, "What is the intrinsic worth of such relationship?" As to his statement that about 4 per cent of those who are infected with syphilis later acquire general paralysis, I would like to add that general paralysis is primarily a mental disorder though accompanied by physical signs and having an organic substratum. In any community there is a certain ratio of the insane population to the mentally healthy and we can easily conceive that among syphilitics there is a corresponding ratio between those who acquire general paralysis and those who escape it.

Dr. Bunker (closing) said: As to the doubt that the discussers feel, I know that there is a large element of subjectivity involved in classifying patients according to the Kretschmer type to which they belong,—so much so that when two German psychiatrists in the same clinic went over a female ward in order to make a census of this character, one of them found almost twice as many pyknic individuals present in the group as the other did; the close working relationship of these two men did not obviate a vast discrepancy in their results, in deciding who were and who were not individuals of the pycnic type of physical habitus. I have tried to make my own classification as objective as possible by having another opinion on the same cases and by supplementing our observations with the so-called morphological index suggested by Wertheimer.

As to Dr. Hyslop's question I am under the disadvantage that these were cases that had been subjected to malaria treatment or to tryparsamide, and therefore the therapeutic outcome is hardly to be compared with what I understand Davis reported. The two series of cases are therefore not quite comparable, though there would still remain the problem Dr. Hyslop has spoken of, of tracing the correlation between the type of individual and the response to malaria or other treatment.

Dr. Jelliffe raised a point to which I laid myself open, namely, the relationship between males and females with reference to the acquisition of syphilis. I should have been on guard against this, because Dr. Stockard was remarking only the other day that some diseases which are alleged to be predominant among males are not really so to the extent alleged. In the case of paresis, with the ratio of four to one, I took the admissions of the last fifteen years at the Manhattan State Hospital, and Dr. Jelliffe's criticism undoubtedly applies. Other clinics have reported higher ratios, and Gärtner says that of course an allowance must be made for the difference in the existence of syphilis in males and females, but how much should be made, he was not able to say, and neither am I. Moore, however,

has, as I recall, reported an equal incidence in males and females in all syphilitic groups except primary syphilis, latent syphilis, and neurosyphilis.

Regarding the proximal bones of the two extremities, what my figures have brought out so far is not any absolute difference in these, but a relative difference in the sense of the distal bone being long in proportion to the entire extremity in question, as compared to the control group. What that may mean I have no idea. This is only intended to be a provisional report, and I hope to work out the data much more fully, so that it may be possible to express some of these relationships in perhaps a more convincing form with regard to the predictional chances of any syphilitic individual becoming paretic or not, depending on his exhibiting one or more of the entire number of characteristics by which it is shown that paretics differ from normal individuals.

I can only say in conclusion that undoubtedly paretics are a different sort of people from normals, and that the remarkable fact, if it prove to be a fact, seems to be that these differences should be exhibited anatomically as well as in other more complex and obscure ways, into which we have so far scarcely penetrated.

CURRENT LITERATURE

I. VEGETATIVE NEUROLOGY.

1. VEGETATIVE NERVOUS SYSTEM.

Pende, N. THE VEGETATIVE INNERVATION. [Rif. Med., Vol. 41, March 16.]

This observer, one of the earliest and foremost workers in the field of vegetative neurology, here discusses a number of intriguing and complex problems. Nutrition and reproduction are first spoken of as functions of the parasympathetic system. Defense and aggression behavioristic reactions are regulated chiefly through the sympathetic. Glycogen formation in the liver and its utilization are enhanced through vagus action and also the sex organs through the pelvic nerve are congested. The sympathetic accelerates the heart beat, raises the blood pressure and heat production as well as the thrombokinas and blood calcium, and mobilizes the sugar. Goldstein attributes to the vagus the states of euphoria and hypomaniacal excitement; the sympathetic causes general catabolism, irritability, aggressiveness and sadness. Dryness of the mouth and insufficient digestive secretion are due to sympathicotonia. Fever cannot be produced if the vegetative centers in the tuber cinereum are destroyed. The sympathetic raises the body temperature by increasing the production of heat and decreasing heat dissipation. The action of the parasympathetic is exactly the reverse. The former prevails in fever; the latter, in defervescence. There are, however, some distinctly vagotonic infections with depression of the sympathetic: diphtheria, typhoid, influenza. The relative bradycardia, hypotension, and dilatation of blood vessels, especially of the internal organs, may be explained by it. Remedies which stimulate the parasympathetic—such as the diaphoretics (salicylates)—easily cause collapse in these conditions. The tuberculosis are sympathicotonic at first, and in the late stages are vagotonic, which means a grave prognosis. If the vagotonia is present from the very beginning, the tuberculosis is comparatively benign. Vagotonia dominates in asthma, angioneuroses, hypothermia and alimentary anaphylaxis conditions. The urine of these subjects contains much brick-dust sediment, phosphates, carbonates and oxalates. Everybody is physiologically "vagotonic" at night. Hence the exacerbations of bronchial and cardiac asthma, angina pectoris, pavor nocturnus, erections and pollutions, and beginning of labor.

Leriche, R., and Wertheimer. SECTION OF RAMI COMMUNICANTES. [Lyon Chir., Vol. 22, Feb. J. A. M. A.]

Leriche and Wertheimer severed the rami communicantes on one side in the lumbar region to relieve spastic paraplegia in extension, of sixteen years' standing, in a woman aged twenty-seven. Surprising benefit followed, but it was most pronounced on the opposite side. The operation was then repeated on the other side, and the subjective improvement was great, but the progress of the tuberculous spondylitis responsible for the paraplegia—which had been only suspected before—proved fatal in two months. In a second case the contracture of the muscles of the neck and clonic spasms were combated by severing some of the rami communicantes, with complete subsidence of the symptoms for two months. In both cases, too few rami had been severed for a complete result. In future they will try to sever all the rami corresponding to the member involved. They think that this method may have a future in treatment of various spastic syndromes, contracture or rigidity from cortical or traumatic lesions, Little's disease, Parkinsonian syndromes, and the like, whether they involve a whole member or only a group of muscles or a single muscle. Severing these rami might have an effect beyond merely the influence on the tonicity. Modifications of a vasomotor, trophic or visceral nature are also possible.

Bolten, G. C. THE EXUDATIVE DIATHESIS. [Ned. Tidsk. v. Geneesk., Vol. 68.]

This author has been studying this type of reaction for a number of years and has written quite extensively. In this paper twelve patients are studied, all showing transient angioneurotic edema or what he considers equivalents. Ten presented other neuropathic manifestations. Complete family history studies show a complex mosaic of these exudative syndromes, but all respond to accelerating hormones (thyroid, epinephrin), which sustains his conception that the exudative instability is due to insufficiency of the sympathetic nervous system a hyposympathicotonia. Fleeting edema of the cortex, fatal at the second attack, is one of his outstanding cases. [See catatonic brain swelling.] Angioneurotic edema is also one of the many causes of asthmatic attacks.

Bolten, G. PAROXYSMAL EXUDATIVE SYNDROMES. [Deut. Zeit. f. N., Vol. LXXVIII. Med. Sc.]

In a long and interesting paper the author supports the thesis that a large number of morphologically distinct conditions, *e.g.*, the fugitive edemas of the skin, urticaria, the various edemas of the mucous membranes, intermittent hydrops of the joints, genuine migraine, genuine epilepsy, genuine asthma, and dysmenorrhea are merely variants of one and the same disease. They all occur in nervous individuals who besides suffering from one or more of these diseases also show a larger or

smaller number of vasomotor and trophic disturbances; the same patient may suffer from more than one of these diseases and one may replace the other vicariously; in the affected families the type of the disease may alter in alternating generations; the same form of treatment, *i.e.*, to combat the altered vegetative tonus, is efficacious in all.

Bolten, G. C. "EXUDATIVE PAROXYSMS." [Ned. Tidsk. v. Geneesk., Vol. 68. J. A. M. A.]

In another contribution to the same general subject the author cites a number of phenomena to sustain his conception that idiopathic epilepsy, migraine, mucomembranous colitis, and certain cases of dysmenorrhea, etc., are due to vegetative edematous crises. The edema is the consequence of the local accumulation of toxic substances—the localization is determined by a constitutional predisposition of the organs. The toxic substances involved are products of normal metabolism which, however, is not carried far enough in time. The metabolism proceeds sluggishly, owing to a disturbance in the numerous fermentative processes of the intermediate metabolism from insufficiency of the thyroid or chromaffine system or both, under the influence of a congenitally substandard sympathetic system. The accumulation of endogenous toxic products leads finally to an effort to throw them off, a paroxysmal discharge, in the form of an exudative process, edema. When this occurs in the brain, we have the epileptic seizure; in the bowel, mucomembranous colitis; in the skin, urticaria. This assumption explains the combination of epileptic seizure and tetany after too extensive operations on the thyroid-parathyroids. It explains further the alternance of such manifestations in different members of families, and, above all, it explains the benefit from treatment with thyroid extract or extracts of other accelerating endocrine glands in all these angioneurotic manifestations. He reports a number of cases of genuine epilepsy notably improved by thyroid treatment; the seizures sometimes returned when the thyroid extract was suspended and were banished anew on resumption. The fluid from the edema, wheals, stools in the colitis, and the vomit that terminates an attack of genuine migraine contains masses of eosinophils, testifying to the intense biologic reaction to the toxic catabolytes. His theory directly controverts Widal's interpretation of the hemoclastic crisis. With pronounced liver disease, there is no exaggeration of the hemoclastic crisis to correspond to the damage of the liver.

Lebedjew, A. J. TREATMENT OF ECZEMA. [Derm. Woch., Aug. 30, Vol. 80.]

Dermatologists are beginning to study the body as a whole in its bearing on their apparently local problems of skin disease, especially as integrated through the vegetative nervous system. The influence of the nervous system in the origin of eczema is quite intimate. He has

witnessed in others and watched in himself the flaring up of eczema under emotional stress. His therapy does not go further than the gross metaphor of "soothing" the nervous system for which he uses bromides. In one case of universal weeping eczema, that had developed the day after a nervous shock, a complete cure was realized with 15 gm. of sodium bromid given by the vein in twenty-one days. In fifty-five cases the result was often as striking as under specific treatment of syphilis, especially in acute eczema and acute psoriasis. Of the deeper unconscious causes for the "emotions" he knows nothing.

Bang, S. PIGMENT FORMATION IN ACTINOTHERAPY. [Ugesk. f. Læger, Vol. LXXXVI, 543. Med. Sc.]

Bang considers as very significant the fact that a strictly limited section of the spectrum possesses the apparently widely different properties of pigment formation, antiseptis (bacterium destruction), and blood destruction. He suggests that actinotherapy and pigmentation of the skin are beneficial because the latter process entails the fixation, as a harmless substance in the skin, of dioxyphenylalanin, which is supposed to be a by-product of the suprarenals and a substance closely related to adrenalin. This substance, or "dopa" as it is known for short, is deposited in the basal epithelial cells of skin, and is converted into harmless melanin when ultraviolet light activates the "dopa" ferment normally present in the skin. In connection with this theory, which Bang considers as new, he points out that faulty action of the suprarenals may be associated with excessive pigmentation of the skin, this abnormal pigmentation occurring in exactly the same epithelial cells as those in which pigment is normally formed by the action of light. This excessive pigmentation of suprarenal disease is confined to those portions of the skin in which "dopa" (Bloch) ferment normally occurs, and it is not demonstrable in patches of vitiligo in which this ferment is absent. [In subsequent numbers of Ugeskr. f. Læger, Bang's paper has been criticised by several correspondents.]

Sluder, Greenfield. SOME RHINOLOGIC OBSERVATIONS WITH SPECULATION CONCERNING INVOLUNTARY NERVOUS SYSTEM. [J. A. M. A., Vol. 84, Nov. 8.]

This author returns to his old favorite and reviews nasal ganglion neuroses reported by himself and others. These include painful phenomena without recognizable pathologic changes in the ganglion area, relieved by cocainization of the nasal ganglion: External cricoidynia; lower jaw toothache; glossodynia; earache in cases of eustachian tube and middle ear lesions; earache secondary to cancer of the larynx; the pain of laryngeal tuberculosis; the pain of herpes of the shoulder; relief of spasm of the esophagus; relief of spasm of the face and upper respiratory tract; syphilitic headache; malarial headache, and ophthalmic migraine. Other parts of the nose and throat were always cocainized as a control. Other phenomena: lumbago, intercostal neuralgia, gastric pain, nausea

and diarrhea, and nodular headache have occurred in patients in which a definite lesion existed in the ganglion district, and were relieved through the ganglion by cocainization or surgery. Cocainization of the nasal ganglion for the pain of pleurisy, sphenoiditis and brain tumor has failed to give relief. Explanation of these phenomena is difficult or impossible with our present knowledge of the nervous system.

Nicolau, S. SENSITIZATION OF SMALL AREA OF SKIN. [C. R. Soc. Biol., Vol. 92, Dec. 19.]

Nicolau describes a case of what he calls "idiosyncrasy" in which application of a mercurial plaster induced a local dermatitis. The sensitization of the diseased area persisted after general desensitization of the skin. Desensitization was finally realized by three exposures to roentgen rays, a total of five skin units.

Moltschanoff, V. WHITE DERMOGRAPHISM IN SCARLET FEVER. [Rus-skaja Klin., Jan., 1925. J. A. M. A.]

Moltschanoff noted the appearance of white tracings on the skin (anemia or negative dermatographism) in 210 out of 215 children with scarlet fever. Its early lively appearance was a favorable sign: in grave scarlet fever this skin reaction did not occur. The hyperemic reaction of the skin, or red dermatographism was manifest in 0.9 per cent of the cases; more frequent was a mixed reaction (one red line and two white). He thinks he is the first to call attention to an exudative dermatographism, urticaria factitia, existing simultaneously with the white, which he noted in nine scarlet fever patients. Absence or slow appearance of the white tracings proved to be an unfavorable sign, hence its value in prognosis. The white skin reaction seems to depend on the degree of inflammatory hyperemia of the surface vessels. He found it in 98 per cent of the scarlet fever cases; in 80 per cent of cases of sunburn; in 13 per cent in diphtheria; in measles in 40 per cent, and in healthy children in from two to ten per cent.

Strausz, O., u. Rother, J. THE ACTION OF RAYS UPON THE VEGETATIVE SYSTEM. [Strahlentherapie, Vol. XIX, p. 37. Md. Sc.]

The authors describe experiments in good detail and with reproductions of curves by which they sought to determine the influence of Röntgen radiation upon the vegetative nervous system and the method by which the changes observed are brought about. They found that X-rays cause, in the rabbit a fall of blood pressure in the production of which the parasympathetic is profoundly concerned, though whether directly or indirectly they were unable to determine. In the ratonized rabbit this fall of blood pressure does not take place. They also found that X-radiation influences the amount of blood sugar, but great variations occur in different species of animals. In rabbits they always observed a considerable rise in the blood sugar, and here the rays act in the same way as

a traumatic or mechanical stimulus. In the dog no noteworthy modification of blood sugar content was observed. In man, immediately after irradiation, there is a fall followed by a compensatory rise 24 hours later. They state that in man, if the abdomen be irradiated prior to injection, the action of insulin on the amount of blood sugar is increased, the action of adrenalin is diminished. Isolated irradiation of organs in the upper part of the belly shows a remarkable effect on the content of blood sugar. In the rabbit, irradiation of the pancreas and liver, leads to increase of the blood sugar, and the same was seen by the authors in the dog after irradiation of the isolated pancreas, while a further rise occurs if irradiation follow extirpation of the pancreas. Irradiation of the adrenals alone (by a specially devised technique) causes a fall of blood sugar which lasts for some days. Strausz and Rother doubt, as the result of their experiments, whether the adrenal is as radiosensitive an organ as is commonly believed, and found that division of the splanchnics led to no noteworthy difference in the results of irradiation. They believe that in abdominal irradiation the action upon the vegetative system is indirect.

Almeida, M. O., et Pieron, H. THE SKIN AND MUSCULAR TONUS. [C. R. Soc. Biol., Vol. XC, No. 18.]

In mammals the tonus of attitude is related to the skin in a manner similar to that in lower animals. The destruction (arrachement) of the skin produces a loss of tonus, but very quickly the consecutive irritation of the cutaneous nerve filaments produces a strong hypertonicity which disappears as this irritation is suppressed by the action of novocaine solutions —x—1—2%. The function of the skin in the maintenance of tonus is a general one. [Mourgue, Nimes.]

Winstel, A. ENDOCRINE GLANDS AND DERMATOSES. [Rev. Fran. d'Endo., Vol. 2, Feb.]

Those of Winstel's cases of psoriasis, eczema, alopecia, prurigo, and erythema with established endocrine disturbances responded to organ-therapy, but the analysis of the action is quite empirical and superficial.

Karplus, I. P. SKIN OF SEX ORGANS AND SENSIBILITY. [Wiener klin. Woch., Vol. 74, Oct. 2.]

That the genital skin area should preserve its sensory functions in severe cord disease where other areas are implicated is made the subject of a rigid inquiry by Karplus. This proved also to be the case in experiments on animals. When he blocked conduction by chilling the cord, the reflexes produced by stimulation of the genital region remained longer and reappeared earlier than after stimulation of other parts of the skin. This bit of phyletic mnemonic inheritance (for the benefit of the race) is of more than passing interest.

II. SENSORIMOTOR NEUROLOGY

6. ENCEPHALITIS.

Flexner, S., and Amoss, H. L. EXPERIMENTAL VIRUS ENCEPHALITIS.

I. AN EXOTIC STRAIN OF ENCEPHALITOGENIC VIRUS. [Jl. Exper. M., XLI, 215; Med. Sc.]

The authors have examined cerebrospinal fluid from various cases of nervous disease by inoculating the fluid intracerebrally into rabbits. Twenty-seven samples derived from cases of epidemic encephalitis produced no effect. One sample of cerebrospinal fluid from a case of neuro and vascular syphilis produced definite and characteristic symptoms, namely, rise of temperature up to 109° F., salivation, muscular agitation, urine retention, and convulsions. The animals died in seven or eight days. The brain tissue of these animals when injected into other animals produces similar symptoms. The virus is filterable (Berkefeld V), withstands glycerol for months, and gives rise to symptoms when inoculated intracerebrally, corneally, dermally (scarification), intravenously, nasally, and intratesticularly. It gives cross-immunity reactions with, and is indistinguishable from, a known strain of herpes virus and Levaditi's so-called encephalitis virus. The guinea pig, mouse, and rat are susceptible to inoculation with the virus, but the pigeon, young dogs, *Macacus rhesus* monkeys, are immune. The authors believe this virus (known as J. B. virus) to be an herpetic virus which has gained access to the cerebrospinal fluid, and at the time of the inoculation of the rabbits was present in an amount sufficient to cause the group of symptoms which the authors term "virus encephalitis."

Flexner, S., and Amoss, H. L. EXPERIMENTAL VIRUS ENCEPHALITIS.

II. HERPETIC STRAINS OF ENCEPHALITOGENIC VIRUS. [Jl. Exper. M., XLI, 233; Med. Sc.]

The authors investigated the action on rabbits of several strains of herpes virus obtained from human sources. Some unequivocal strains, particularly the H. F. strain isolated by these workers, have an encephalitogenic power not exceeded by any strain of the so-called encephalitis virus. Although a true febrile herpes strain, it does not conform to Levaditi's view that the "herpetic-encephalitic" group of closely related viruses has strains which have an affinity for the central nervous system, while others have an equal affinity for skin and the cornea. The H. F. herpes strain produced "virus encephalitis" not only on intracerebral injection, but also on corneal, skin, intravenous, and testicular inoculation. The authors conclude that any distinction made between the encephalitogenic power and the ectrotropic action of the encephalitis-herpes viruses is artificial, and the only difference between the various strains is that of virulence, which may be stronger or weaker.

Sabrazès, J., Sainté Marie, Flye, and Baylac. ERYTHEMA SCARLATINIFORME IN EPIDEMIC ENCEPHALITIS LETHARGICA. [Gaz. Hebd. Sci. Méd., Bordeaux, Vol. 46, Feb. 8.]

This girl of sixteen developed an early diplopia, five days after which she showed a scarlatiniform eruption and a painless infection of the throat. The erythema was transient; there was no desquamation; the lethargic stage of the disease, which lasted eleven days, then came on. In convalescence there was a marked paralysis of accommodation. The patient was treated for a fortnight by daily intravenous injections of sodium salicylate (one gram daily at first, and later two grams), and finally complete recovery occurred. Erythema scarlatiniforme differs hematologically from scarlet fever in that few or no eosinophils are present, and hardly any basophil inclusion bodies are seen in the polymorphonuclear leucocytes. Sometimes the eruption is morbilliform, and suggests measles or rubella. In other cases the rash is papular or purpuric, as in cerebrospinal meningitis. The eruption, accompanied by an enanthem at the onset of epidemic encephalitis, should be compared with the similar eruption noted in epidemic poliomyelitis, which, according to Regan, is found in 10 per cent of some epidemics.

Salmon, A. THE PATHOGENESIS OF THE POST-ENCEPHALITIC PARKINSON SYNDROME. [Revue Neurologique, An. 31, T. 1, No. 2, p. 192.]

The bradykinesia, which is the most characteristic feature of the Parkinson syndrome, is due to increased tonus of the muscle and also to psychoaffective depression. Amelioration of the motor disturbance is brought about by medicines that paralyze the parasympathetic system. [Camp, Ann Arbor.]

Leroy, A. LETHARGIC ENCEPHALITIS. [Liege Med., XVI, March '20, with **Lamalle, A.**; XVI, March 27; XVI, May 21. Bull. soc. mental de Belgique, No. 192, XVI, September.]

In a series of communications these Belgian neurologists survey the encephalitis epidemic as it invaded Belgium. The first paper deals with a case with narcolepsy, ocular troubles, spinal lymphocytosis 120, all of which disappeared after three weeks. In his second paper he deals with three cases in which great excitement was marked, alternating with insomnia, delirium, and involuntary movements. This was in the beginning of the epidemic in Belgium. A third paper discusses paradoxical kinesias and akinesias in encephalitis. A fourth deals with the frequency and importance of mental disturbances occurring in encephalitis as well as the psychomotor disorders. Antisocial reactions, characterological reactions, and the outcropping of instinctive tendencies is emphasized. In his last paper he discusses four interesting cases: (1) Rhythmic and paroxysmal cough, accompanied by involuntary movements and Parkinsonism; (2) almost continuous tachypnea with myoclonia and Parkinson-

ism; (3) myoclonia and early paradoxical aphasia, later with paroxysms of tachypnea with tendency to disappear, and (4) development of very typical Parkinsonism after intense and prolonged tachypneic attacks. [Author's abstract.]

De Costobadie, L. P. EXTENSIVE HEMORRHAGE INTO PITUITARY IN CASE OF LETHARGIC ENCEPHALITIS. [Lancet, Nov. 15, 1924; J. A. M. A.]

This clinical report is of a man, aged forty-nine, who was ill for a fortnight with marked insomnia, severe frontal headache, and occasional vomiting. Later he passed into a case of restless delirium with violent choreiform movements; this alternated with profound stupor, when he would lie for hours motionless upon his back with waxy pallor, closed eyes, and masklike face. He had the dry, furred tongue and fetid breath usually present in severe cases. Ptosis was marked, he was at no time ever able to open his eyes. He had remission of symptoms with movements of unclouded intelligence during the four weeks before he died, also transient involvement of other cranial nerves. He had purulent conjunctivitis. The cerebrospinal fluid was under increased pressure. The urine, which was not excessive, showed no sugar or other abnormality. The temperature was in the region of 101° F. for the first fortnight and then remained at 97° F. The pulse was unusually slow and he appeared to feel the cold unduly. The restlessness became more marked, with much rigidity of the limbs; the patient became gradually weaker, and died six weeks after the onset of the disease. The only suggestion that there was a deficiency of secretion was the patient's unusual hairlessness. Though pubic hair was present, he had never shaved, and the skin was of that soft velvety type with much panniculus seen in cases of hypopituitarism. The pituitary secretion appeared as a hemorrhagic mass except for a small pale area posteriorly.

Hagelstam, Jarl. RELATION OF INFLUENZA, NERVOUS SYSTEM, AND EPIDEMIC ENCEPHALITIS. [Finska Lak. Hand., Vol. 66, p. 744, Oct.]

During the years 1918 and 1919, as well as in the beginning of 1920, in Helsingfors as well as practically everywhere else, malignant influenza in the form of an epidemic of bronchopneumonia was present. At the same time the city hospital received much more frequently than previously sporadic cases of an inflammatory affection of the nervous system. These showed central or peripheral symptoms. In December, 1920, and January, 1921, epidemic encephalitis appeared in Helsingfors at its maximum, but already as far back as December, 1919, a typical case of this disease had been treated in the city hospital. After the passing of the epidemic in March, 1921, occasional cases were observed, even into the middle of the year 1924. In addition to these cases a considerable number of inflammatory disorders of the nervous system were under observation, among which there stood out, especially in young persons, a meningo-

encephalitis, with very striking initial symptoms, of short duration, and for the most part quick recovery. In the majority of these cases lumbar puncture gave a cloudy fluid which usually was sterile in culture media. In some of these cases definite recognizable influenza symptoms either preceded or accompanied the disease; in others no such relationship was observable. In these cases, as well as in those of the encephalitis, it was very striking that the history gave evidence of some form of hereditary disorder. Hagelstam, on the ground of his observations, is inclined to maintain that an influenza infection of a particular and comparatively weak virulence is at the bottom of these cases acting upon certain constitutional factors in the individual affected.

Foster, H. E., and Cockrell, J. R. CEREBROSPINAL FLUID IN ENCEPHALITIS LETHARGICA. [Am. J. M. Sc., CLXVII, 696.]

The sugar estimated by the method of Folin and Wu in normal cerebrospinal fluids, is considered by Foster and Cockrell to vary between 0.04 and 0.06 per cent; in 32 out of 35 cases of encephalitis lethargica of which details are given the amount of sugar was greater than 0.06 per cent. Occasionally increase of sugar is found in other pathological conditions, but there is always a decrease in tuberculous or acute purulent meningitis. Increase of sugar in an otherwise normal fluid is considered strongly suggestive of encephalitis lethargica. The authors emphasize the importance of estimating the sugar quantitatively by a reliable method, and they consider the results of value in differential diagnosis.

Alpers, B. J., Campbell, C. J., and Prentiss, A. M. THE SPINAL FLUID SUGAR. [Am. Arch. Neurol. & Psychiat., XI, 653. Med. Sc.]

Alpers, Campbell, and Prentiss estimated the sugar in the cerebrospinal fluid of 421 persons by the Benedict-Osterberg method; control observations were made by the method of Folin and Wu. They conclude that the normal cerebrospinal fluid contains from 0.05 to 0.065 per cent, although larger amounts may be present. In 29 cases of definite epidemic encephalitis examined within a few days of onset the figures ranged from 0.06 to 0.111 per cent, the average being 0.085 per cent and the majority lying between 0.076 and 0.098 per cent. There is therefore an increase of sugar in this disease as a rule, but it may be merely at the upper limit of the normal range. The spinal fluid sugar may be increased also in untreated cases of general paralysis, in dementia precox, in cerebral embolism or thrombosis, paralysis agitans, and especially in diabetes. In some of these conditions very high amounts, well over 0.1 per cent, may be found, but other cases of the same disease may be within the normal range.

Neel, A. V. ATYPICAL FORMS OF EPIDEMIC ENCEPHALITIS. [Uge. f. Laeger, Vol. 86, Dec. 18.]

A note of insistence on careful history taking should be emphasized, otherwise an obscure case of epidemic encephalitis will be overlooked. The

development of after-effects even very late, similar to those following an attack of epidemic encephalitis is significant. The author examined forty patients during 1923 three to six months after they had suffered from one or more attacks of severe hiccup, and in 80 per cent of these more or less definite clinical signs of epidemic encephalitis could be recalled. The fact that the rise in the number of cases of this disease synchronized with the rise in the number of cases of epidemic hiccup further stressed the likelihood of an etiological connection between the two. The author publishes details of ten cases observed late in 1924, and of interest because of their suspected relationship to well defined epidemic encephalitis. In two of these cases an attack of persistent hiccup recurred, the interval in one case between the two attacks being about three years, and in the other case almost four years. In both cases there were attacks of giddiness and the ocular symptoms which are common in epidemic encephalitis. In one case there was paresis of the right arm. In a third case there was persistent hiccup day and night for three and a half days, associated with a sensation of feverishness; but there were no signs of coryza, and there was no previous history of hiccup. This patient, who was a man aged forty-nine, had contracted "influenza" in the summer of 1918, with much drowsiness. At the same time one of the seven children at home also fell ill. Since then he had had disturbances of vision, and Neel believes that ever since the summer of 1918 this patient had been suffering from a mild and abortive form of epidemic encephalitis which, in December, 1924, flared up in the form of epidemic hiccup.

Renaud, M. ANTITYPHOID VACCINATION IN PARKINSON SYNDROME. [Bull. Soc. Méd. des Hôp., Vol. 48, Oct. 31.]

A report of a therapeutic effort in which the author injected in ten post-encephalitic patients with syndromes of three years' duration a gradually increasing dose of from 0.5 to 2 c.c. of a typhoid vaccine. No effects on the symptoms could be seen after six weeks of daily injections.

Kant, Otto. MENTAL CONDITION OF THE CHRONIC (ADULT) ENCEPHALITIC. [Arch. f. Psychiatrie u. Nervkr., Vol. LXXII, Nos. 3, 4.]

On the basis of seven cases described in detail the writer discusses the character changes which occur apparently as the reaction of the psyche to the disturbances in the motorium brought about by the encephalitis. Psychic alteration is regularly present but varies from a slight degree in the akinetic cases to the most serious changes in character, where the amyostatic syndrome is in the background. The personality becomes qualitatively altered (as in loss of judgment) because of quantitative changes (increase in impulse, want of thought). The former personality plays but little part. There is no relationship with true psychoses such as schizophrenia. Although there is great resemblance sometimes to conditions seen in diseases of the frontal brain, the disturbance is not so centrally located. Encephalitis brings testimony of the importance for

the personality of the brain stem, though it shows, too, how little complex psychic functions can be definitely localized. The social problem in regard to these chronic encephalitics is a serious one. While not genuine psychotics, their lack of control of impulse may constitute a grave social danger. In other cases mental efficiency is seriously lowered so that institutional care becomes necessary. The problem of the care of children thus afflicted is an even more difficult and important one.

Leyser, E. CHARACTER CHANGES FOLLOWING ENCEPHALITIS EPIDEMICA.
[Arch. f. Psychiatrie u. Nervkr., Vol. LXXII, Nos. 3, 4.]

The author distinguishes four character groups in this connection, the hyperkinetic, the shy and the bold, the aggressive, the sexually unrestrained, but cannot refer these to one single disturbance as the basis. The hyperkinesia he assumes as due to loss of motor inhibition of striate origin; disturbance of the balance between shyness and boldness reveals specific injury in the affective sphere; the aggressiveness and the hypersexuality are the result of the general alteration of the entire psychological situation. Childhood shows itself particularly susceptible to such effects of encephalitis because of the here specially close association of the regulation of motion and the emotional basis of shyness.

Hohman, L. B. TREATMENT OF POST-ENCEPHALITIC PARKINSONISM.
[Bull. Johns Hopkins Hosp., Vol. 37, Oct. 31.]

This therapeutic report is upon the treatment of eighteen cases of post-encephalitic Parkinsonian syndrome by the injection of hyoscine hydrobromide. The average time elapsing between the original acute attack and the onset of the Parkinsonian syndrome was sixteen months; in one patient the interval was as long as five years. The maximum dose was 1/100 grain four times a day. In no case was it necessary to increase the dosage because of any acquired tolerance for the drug. No bad effects were observed, and the patients experienced no uncomfortable symptoms except some difficulty in accommodation, vertigo, and somnolence. As soon as the effective dose was determined the difficulty in accommodation and other untoward symptoms disappeared. In every one of the cases objective improvement was noted. In six the improvement was slight, in five definite, and in seven marked. The signs of marked improvement were return to work after months of invalidism and ability to attend to personal wants after being bedridden and helpless. Definite improvement indicated return to full activity after partial invalidism, and the term "slight improvement" was applied to some relaxation of the rigidity, but not enough to increase the practical efficiency of the individual. The improvement in the mental attitude was very striking in a number of patients. Hyoscine was tried in other residues of epidemic encephalitis, such as psychoneurotic states and the behavior disturbances of children and adults, but in none of these cases was there any improvement.

Fischer, B. TICS IN ENCEPHALITIS. [Med. Klinik, Vol. 20, Oct. 19.]

A clinical study of tic-like movements which had remained after epidemic encephalitis or had developed later as sequelae. In some compulsive thinking, obsessional, were related to the movements. In one boy of thirteen interesting menagery movements were observed. No psychological analysis.

Schirmer, O. MULTIPLE FELONS IN EPIDEMIC ENCEPHALITIS. [Schw. med. Woch., Vol. 54, Oct. 23.]

This paper records a case of epidemic encephalitis in a man, aged thirty-three, complicated by multiple felons, which involved first the fifth, fourth, and third fingers successively of the left hand, in which the tremors and motor deficiency were most pronounced, and then the fifth and fourth fingers of the right hand. The condition was probably due to a trophic change like that present in syringomyelia and Morvan's disease; but while in these two disorders anesthesia is sufficient to explain the condition, in the present case there was no sensory disturbance, nor was there any vasomotor change. The rapid recovery, in spite of the considerable loss of tissue, was in favor of a trophic origin, as a purely exogenous infection would not have cleared up in so short a time and almost without reaction. The situation of the nervous lesion was probably the cerebral center of the hypothetical trophic nerve fibers and not the peripheral nerves.

Lhermitte, J. J., Kraus, W. M., and Bertillon, F. MUCIN-LIKE BODIES IN THE CENTRAL NERVOUS SYSTEM IN EPIDEMIC ENCEPHALITIS. [Am. Archives of Neurology and Psychiatry, Vol. XII, pp. 620-24.]

In a case of the lethargic form of epidemic encephalitis which developed a typical Parkinsonian syndrome about a year after the onset, and which died two years later of pulmonary tuberculosis, typical degenerative bodies or deposits are described. They were found in the neuroglial meshes of the white matter, but not within neuroglia or nerve cells. Their form was spherical with irregular edges on high magnification. The size varied from 20 to 50 microns in diameter. They were not stained by acid dyes, but metachromatic by basic dyes, and they gave the typical red of mucin with musicarmin. If lyon blue and methyl blue (both acid dyes) were used in combination with eosin, the bodies were stained faint blue, perhaps due to a mordant action of the eosin. Chemically these deposits are either mucin or a closely related substance. [Author's abstract.]

Villela, E. EXPERIMENTAL PARALYSIS IN DOGS. [C. R. Soc. Biologie, Vol. 92, Oct. 31; J. A. M. A.]

Villela observed an experimental intra-uterine transmission of *Trypanosoma cruzi*, causing congenital encephalitis in dogs. Crithidia

forms of the trypanosome were found in the blood, while leishmania form agglomerations were noted in the heart, and encephalitic foci in the brain.

Lemos, Magalhaes. INTERMITTENT CLAUDICATION, WRITERS' CRAMP, CONJUGATE DEVIATION OF THE HEAD AND EYES, SPASM OF THE MUSCLES OF MASTICATION AND OF THE ARMS APPEARING IN THE COURSE OF A PARKINSON SYNDROME DUE TO CHRONIC ENCEPHALITIS. [Revue Neurologique, Vol. II, No. 5, p. 425.]

The patient was eighteen years old. General asthenia and insomnia lasted for four days, and following this he slept continuously for the next six days. Signs of the Parkinson syndrome began during the second week, gradually growing more marked. He was examined two years later and showed marked signs of this condition. He also complained that after walking a short distance the left leg became stiff and painful so that he was compelled to stop. This symptom would disappear completely after a few minutes of rest. The author believes that it was not due to a peripheral vascular condition but was a result of the lesion in the corpus striatum. Later on the attacks of claudication were associated with a conjugate deviation of the head and eyes. On trying to write, the hand would show a spasm resembling writers' cramp. These spasms were absent while the patient was under the influence of scopolamin. [Camp, Ann Arbor.]

Seletzky, W. ENCEPHALITIS CHRONICA DISSEMINATA (ENCEPHALITIS LETHARGICA). [Arch. f. Psychiatrie u. Nervkr., Vol. LXXII, Nos. 3, 4.]

Seletzky draws certain conclusions from 150 cases which he has studied, the report of which he publishes with illustrations. He believes that encephalitis lethargica may have an acute as well as a chronic course; the latter is, however, a separate disease form. It is chronic in its character from the very beginning, reaching its crisis perhaps two or more years after its inception. It is the prevailing form of encephalitis lethargica. It may result from any infection, spotted typhus, influenza, malaria, etc., or puerperal. Sometimes it follows upon violently disturbing events, pogroms, etc. Its course is that of encephalitis chronica disseminata, for various regions of the brain stem or of the cortex are evidently affected (frontal lobes, operculum, gyrus uncinatus). Lesion of the pons varoli with that of the frontal lobes determines the so-called Parkinsonian syndrome; ataxia of mastication is due to lesion of the substantia nigra. It is not a result of the special character of the infection that different symptoms appear some time after the infection has been overcome, but of the gradual loss of resistance on the part of the nervous system from insufficient nourishment. It is important to test the respiratory curves, for as a rule marked disturbance can be observed here, sometimes in uncompleted inspiration. The respiration centers, the author reminds us, are different for diaphragmatic and costal respiration.

Shrubsall, F. C. MENTAL SEQUELAE OF ENCEPHALITIS. [Br. Med. J], Jan. 17, 1925.]

This observer brought forward some figures obtained in the London school medical service. Reports had been obtained in the latter part of 1924 relating to the condition of 119 children who, earlier in that year, had been reported as suffering from encephalitis. Of this number 26 had apparently completely recovered, and 93 partially recovered. The predominant symptoms at present were: Impaired sleep, 40; impaired intelligence, 26; paresis, 6; twitchings, tremors, or "fits," 12; ocular symptoms, 10; conduct changes, 44. The proportion of cases which seemed to have recovered completely was low, but it was probable that the milder cases did not come under notice. The most characteristic of the mental changes was irritability, the rapid onset of fatigue, lack of continuity of attention, such as was noted in those recovering from influenza, but in the case of encephalitis the condition persisted for a prolonged period. The common story from the schools was that the subject's work had fallen off badly; his attention wandered, and he was sleepy. The changes of conduct noted were of a varied character, but seemed to take their origin in the state of irritability, lack of inhibition, and consequent impulsiveness which immediately followed the acute phase of the illness and became fixed either by habit formation or by a secondary development of psychoneurosis dependent on the particular features of the individual environment. Dr. Shrubsall gave a remarkable account of the conduct changes in some individual instances. One of these was a theft mania, which took the form of persistent stealing of bicycles, the culprit endeavoring to sell the machine after having had his "joy ride."

MacNalty, A. S., and Parsons, A. MENTAL SEQUELAE IN ENCEPHALITIS. [Br. Med. J], Jan. 17, 1925.]

This joint study dealt with the epidemiology. They said that encephalitis lethargica was a disease which was claiming an increasing toll of victims. The notifications for 1924 largely exceeded the figures for each preceding year. From 1919 to 1923 the inclusive case mortality had averaged about 50 per cent on the basis of the notified cases, but during the recent outbreak there had been indications that the severity of the disease had declined. It was sufficiently established that the disease brought in its train sequelae of both neurological and medico-legal importance. The manifestations of the after-effects of encephalitis lethargica might be grouped into (a) those appearing in the course of the original acute malady and persisting after partial or complete disappearance of all other symptoms, and (b) those which ensued after the original acute malady had apparently terminated or, in some cases, had passed unrecognized. It was as yet unknown whether the late manifestations were true after-effects or were indicative of the persistence of the original infection, an interval of latency having occurred. Investigations were now

being made by the Ministry of Health on this question. In a number of instances reported the mental condition had been such that it was necessary for the patient to be certified. The great frequency of the Parkinsonian syndrome was a marked feature in Continental literature; it was difficult to say whether this preponderance also obtained in this country, owing to the fact that the acute illness passed unrecognized and unnotified in many cases. Once declared, however, the late manifestations could not be ignored. Mental symptoms complicated the mental picture at all ages. Few cases of disease were more pathetic than juvenile cases of paralysis agitans, familiar to the neurologist since 1919. The treatment and provision of institutions for patients presenting mental after-effects were problems of considerable difficulty. Cases of mental disorder following on encephalitis lethargica in the adult appeared, on the whole, to be more recoverable than similar conditions in children. At the same time it was his opinion that many juvenile cases, if recognized early and suitably and sympathetically treated, would do well. Between these cases and the severe mental disorders with hopeless prognosis were a number of cases of mental derangement in which special treatment would be well worth trying with a view to recovery. Facilities were needed also for medical observation and study of these conditions. The question of making provision for the special care and treatment of the after-effects, especially the mental, was under the consideration of the Ministry of Health and other government departments at the present time.

Boenninghaus. WEAKNESS OF UVULA AFTER ENCEPHALITIS. [Deut. med. Woch., Vol. 50, Oct. 24.]

A clinical report in which there is cited a slight paresis of the uvula as an encephalitic sequel. If the base of the tongue is depressed, the uvula does not move in phonation, because the weakened levator veli muscles are unable to overcome the traction of the transverse muscle of the tongue.

De Giacomo, U. GLYCEMIA IN THE POST-ENCEPHALITIC PARKINSONIAN SYNDROME AND IN PARKINSON'S DISEASE. [La Riforma medica, No. 1, Vol. 41.]

This is a brief note which forms part of a series of investigations that U. De Giacomo and F. Di Renzo have performed systematically in nervous and mental diseases. The author studied eight cases with post-encephalitic Parkinsonian symptoms and five patients with classical paralysis agitans by the method, modified as required, of Bang-Cruto. In the post-encephalitics examined the author found a certain hyperglycemia, especially in the graver forms, while in the true Parkinsonian the hyperglycemia showed itself slighter and inconstant. The author is inclined to attribute the increase in rate of glycemia in the post-encephalitic cases to alteration of the cortical neuro-vegetative centers or, with

less probability, to slight hepatic lesions, which various investigators admit in this clinical picture. On the other hand, the slighter and inconstant hyperglycemia of true parkinsonism is with more probability attributed to senility and to cerebral arteriosclerosis. Other notes upon glycemia in neuropsychopathics are still in the course of publication. [Author's abstract.]

Kennedy, Roger L. J. PROGNOSIS OF SEQUELAE OF EPIDEMIC ENCEPHALITIS IN CHILDREN. [Am. Jl. Dis. Children, Vol. 29, August.]

The author gives the following summary of a study of sixty-one cases of residual epidemic encephalitis in children under fourteen years of age, fifty-two of which were traced from the time of their first visit until the present:

Twenty-one patients, sixteen of whom were traced, presented the parkinsonian syndrome. None was improved; the condition of two was stationary, and of fourteen worse. One died from an intercurrent infection. The prognosis in this condition is not bad as regards life, but poor as regards improvement or recovery.

Twenty-three had changes in behavior and personality. Six were improved, and seventeen showed no improvement, or had become worse. The lack of restraint exhibited by these children does not necessarily imply any great degree of mental impairment.

Nineteen presented disturbances of sleep. Nine of these are now sleeping practically normally, three still show more or less disturbance, and seven are the same or worse.

The respiratory syndrome occurred in this series much more commonly than is indicated by the literature. Two of seventeen children who had this sequela are well; three are apparently improving, and the condition of twelve is unchanged. In none has the condition become worse.

Trömmner, E. RARE MANIFESTATIONS OF EPIDEMIC ENCEPHALITIS. [Deut. med. Woch., Vol. 51, Jan. 16.]

A clinical study and résumé of sixty cases of epidemic encephalitis observed during the past three years. In fifteen there were symptoms which, he states, have hitherto been seldom or never described. In one case there was a bright red scarlatiniform rash over the chest and back at the height of the attack, when the temperature was 106° F., and the patient was breathing very rapidly. Death occurred early in this case. In another, a sixteen-year-old boy, the symptoms began with loss of appetite, restlessness, pain in the throat, and diplopia. Delirium ensued, and during convalescence a small-scaled desquamation of the hands and forearm occurred. In another case, a man of forty, the first symptoms were insomnia, slight fever, and diplopia. He was unconscious for three weeks; some time after he had recovered consciousness he was

drowsy even by day, and physically and mentally lacking in adaptability. Afterwards his weight increased, and both hands became swollen, the swelling being suggestive of Quincke's edema. This condition seemed to be permanent and refractory to treatment. The author's list of unusual sequels to epidemic encephalitis includes, in addition to myxedema of the hands, hemiatrophy of the tongue, hemiataxia, and hemiepilepsy resembling Jacksonian epilepsy. The author records also three cases of epidemic encephalitis with symptoms, including delirium, of a most fulminating character.

Gundersen, E. EPIDEMIC MYELO-ENCEPHALITIS WITH EXANTHEM. [Norsk Mag. f. Laeg., Vol. 86, Feb.]

A man, fifty-five years of age, had a lumbar herpes zoster and at the same time developed general varicella-like eruption, with symptoms of epidemic encephalitis. This study interprets the eruptions in epidemic myeloencephalitis as a secondary neurogenous symptom of a posterior poliomyelitis. He points to the similarity between such cases and those of chickenpox with simultaneous cerebral and motor symptoms, illustrating this by the report of a chickenpox case with these symptoms. Eight other related cases (three with eruption) from the same locality and time are also reviewed.

III. SYMBOLIC NEUROLOGY

1. PSYCHOLOGY, PSYCHONEUROSES, ETC.

Gregory, M. S. MENTAL CONFLICTS AND PHYSICAL SYMPTOMS. [Kansas State Medical Journal, Vol. 24, Feb.]

"For many years while doing general practice, I had become more and more convinced in the efficacy of letting or encouraging my patients to tell their life's story. Later while working with the so-called shell-shocked men in the army, I became more convinced than ever that there was much in their stories to act as an etiological factor in the formation of their neuroses and this factor we will call the "Conscious Conflict." I will not attempt at this time to discuss the many other etiological factors which may enter into the formation of a neurosis. Such factors as the "Unconscious Conflict," the "Family Romance" or the "Oedipus Complex" will be left to others who will follow in the discussion of this paper. In order to discuss the "Conscious Conflict" intelligently, it is necessary for us to arrive at some understanding about which we are speaking. The "Conscious Conflict" as here used may be defined as a conflict or fight which we bring about in the conscious mind. This fight is usually between the instinctive, primitive wishes on the one hand and the socialized, civilized wishes on the other; and when a person does any act or commits any crime that is in opposition to their early training, we say that a "Conscious Conflict" exists. In order to understand why a conflict

can exist, it is necessary for us to consider the early evolution of the child. The newborn babe comes into the world at the end of a long, long trial of evolution, bringing with him the untamed and untrained instincts of the whole animal kingdom. This is the start which the newborn babe has. During the first year, the babe is largely conditioned to love. The fond mother loves and caresses the body of her infant. She washes, rubs and pats the various skin areas of the babe, thereby increasing its power to love and determining the manner of its expecting and demanding pleasure even after it becomes an adult. During the first year, every wish and every desire of the babe is gratified. But with the beginning of the second year, the treatment is radically different. He is now being taught to be clean and many of his desires are denied and his will is frequently crossed. And, unless firmness and judgment is used, the infant during this period, may resort to the habit of holding its breath, falling upon the floor in tantrums, kicking and screaming, thus laying the foundation for hysteria and abnormal behavior to manifest itself in later life. During the third, fourth and fifth years, the training must be kind, firm and definite, leading to comparatively perfect obedience. And yet, this treatment should not be crushing. The will should be bent but not broken and thus obedience obtained without rebellion. At this period, from the third to the fifth years of the child's life, the child is taught to restrain many of its inherited instincts and also we have the beginning of moral training started at the mother's knee. Then the child is taught in the Sunday school, day school and all through life to be a moral creature. When adulthood is reached, the individual has arrived at certain definite convictions of right and wrong—the more severe the training, the firmer the conviction. Every thought, every act, every stimulus and every experience which has reached the child and young adult has been built into his personality; thought upon thought, act upon act, experience upon experience as rock is placed upon rock in the foundation of a great building. If he has been trained to be a rebel, he will be a rebel still; if he has been trained to be a hysteric, he will be a hysteric still; but if he has been trained to obey without rebellion and has been trained in the morals of life, it will be necessary for him to live in perfect harmony with that definite moral training. That is, he must live not as he might wish to live, but must live in harmony with that training. And yet, civilized, educated, religious man has been trying for ages to prove that wrong acts can be committed without paying the penalty, but the penalty is always paid. Just as soon as a man begins to do that which he has been taught is wrong, just so soon he develops a fight in his mind; that is, he develops a conflict and in this case it is above the throne of consciousness. He soon becomes more or less confused. He wonders why he makes mistakes he has never made before. He loses a great percentage of his efficiency and if the conflict is a bad one, he at the least excuse gets sick. He complains of his stomach, his liver or his back and in this condition he frequently travels from physician to physician, seeking the help which

he rarely finds; and often when some little accident happens to him, he at once develops a paralyzed arm or a paralyzed leg, or perhaps becomes blind or deaf. Of course, these paralyses and symptoms are functional as they reside wholly in the mind. A very unusual manifestation frequently appears simultaneous with the symptoms and that is that the patient feels mentally very much better after he develops the symptoms. That is, whenever an atonement is made, the mind always becomes better—he is paying his penalty. A few examples will make this point plain. First, a soldier at Fort Sill, Oklahoma, had the following experience: While working in a corral one day a horse ran into him, striking the horse's right shoulder against his right shoulder, spinning the soldier around striking his left elbow upon the ground, making a slight but unimportant abrasion. He immediately became unconscious, was rushed to the Old Post Hospital whert he remained for two months with the questionable diagnosis of "traumatic-paralysis" of the right arm.

When I first saw him, I found the following: Right arm paralyzed; all skin areas were anesthetized—he could not feel a pin prick; the corneal reflexes were abolished—he could not feel a pin when jabbed into his eyes; pharyngeal reflex was abolished. The deep reflexes were present and normal. He insisted that he was improving and that he was very happy. He was happy but had shown no improvement for eight weeks. He was well educated and had a splendid moral training and I felt very sure that he had a serious "Conscious Conflict." He was sent to the nervous disease ward and after two weeks of acquaintance, I asked him to tell me his story. He immediately denied that he had anything to tell, saying that he had always been moral and had always lived absolutely right. However, after a few hours of thinking it over he came to my office and begged permission to make a confession. This is what had happened: Two years previously he had impregnated his sweetheart and had run away and had left her to meet her shame alone. Immediately he began to have horrible dreams. He was filled with fear lest he should meet the sheriff at any moment. Six months previously he had joined the Catholic Church but without relief; he made no confession. However, after confessing to me, he at once put machinery into motion to correct his misdeed as far as it was possible to correct it, and in just forty hours he met me at my office door and saluted me with his arm which for ten weeks had been paralyzed. Examination revealed a complete physical recovery. He at once became a good and efficient soldier. Yet one feels sure that there were more conflicts which should have been uncovered in this man's mind which some day may give him more trouble.

Another case is that of a lieutenant upon whom I was called to council at the Old Post Hospital at Fort Sill about the first of August, 1918. About the first of October of that year he was transferred to my care. When seen in August, he could walk quite well but all skin areas were anesthetized from his waist down. At that time he was recommended for discharge but for some reason the recommendation did

not go through and when he came under my care October first, he was a pitiable sight. He had a typical astasia-abasiac walk. He was then walking with two canes, shoving first one foot four or five inches and then the other foot, never taking either foot from the ground. He was so full of fear that he could hardly talk or answer ordinary questions. Examination revealed besides the walk that all skin areas were anesthetized and that corneal and pharyngeal reflexes were abolished.

At first he would deny that he had any story to tell and would become very panicky upon each visit but later he told me his story which for a man raised as he had been raised, was indeed very sordid. He had been raised a devout churchman, and had both college and university degrees. This is what he had done: He had made incestuous love to a maiden aunt and had borrowed a large sum of money from her and had hidden it so that she could not get it. He finally said, "Give me thirty days and I will make things right. You don't have to tell me what I must do to get well. I know." He had his thirty days and long before that time was passed he was tramping without canes, over the hills around Fort Sill.

Another was a case of a captain from the School of Fire. For many months this man had been a very efficient officer in the artillery. Gradually, however, work became hard for him and he broke down. Upon examination, the principal sign found was a disturbance of the tactile sensation. He, like the previous cases reported, was anesthetized from the waist down. I asked him to tell me his life story but he, like the rest, denied that he had a story. Finally, he said, "Yes, I have." Twelve years previously he had betrayed his sweetheart and for twelve years this woman had begged of him to give her child a name. When he got through with his story I asked him if he knew what he had to do. He said, "Yes sir, I do." He went directly to the telegraph office and wired the mother of his twelve year old son to come to Fort Sill at once and be married. This man's recovery was quick and complete. He immediately became, as previously, a good and efficient officer.

One other case may be mentioned. A young married woman was admitted to a private hospital with obsessions. She would walk about the ward wringing her hands and saying, "Can a little girl six years old commit a great sin?" Also she became obsessed with the idea that by her looking at a baby she would injure it so that the baby would die. Upon the face of this, one can see two things: first, a great sin and second, a baby.

She had been raised a devout Catholic. She had been taught that to marry a Protestant was a great sin; that by being married by anyone saving a priest was no marriage and that she would be living in adultery. She was also taught that abortion was murder. Her story ran somewhat as follows: She ran away and was married to a Protestant by a justice of the peace and six months later a criminal operator murdered her unborn child. The obsession of hurting a baby by looking at it comes from the fact that she murdered her own unborn baby. The obsession of the

sin at six years old is not quite so evident. But when the emotion of one event is torn from that event and tied to some other event, then an obsession exists. She had torn all of the emotion from the abortion and tied it to the little childhood love affair and thus produced her obsession.

The treatment consisted in taking the sin from the childhood event and putting it back to the place of the origin. This was done by calling her attention, in severe terms, to the sin of her abortion and she rapidly improved. To be well she must be remarried by the priest and never again produce abortion. She must live in harmony with the religion of her childhood. She must live, not as she might like, but must live in perfect harmony with the principles of her early training. Lady Macbeth cannot escape the penalty of her crime.

In conclusion I wish to say: First, that it always pays to listen to the life's story as told by the patient. Second, that the conflict thus discovered is frequently only one of several etiological factors, but often a very important factor in the formation of the neurosis. And third, the patient in order to get well, and stay well, must live not as he might wish to live but must live in harmony with the principles of his early training. [Author's abstract.]

v. Hattingberg. TRANSFERENCE AND CHOICE OF AN OBJECT. THEIR SIGNIFICANCE FOR THE THEORY OF THE INSTINCTS. [Int. Zeit. f. Ps., Vol. VII, No. 4.]

The theory of the instincts has been greatly illuminated by Freud's researches and for this reason v. Hattingberg has gathered together a series of facts under the head of transference and choice of object in order to show just what has been contributed by psychoanalysis to our knowledge of the emotions, believing that these factors are not always given due weight in dynamic psychology. Transference can be best understood, he says, from a description of the manner in which the concept arose. Psychoanalysts noticed that, in the course of treatment, patients invariably assume certain attitudes toward the physician, in the sense that the patient develops a sort of sympathy or feeling of love. It was impossible to explain these feelings as due to the psychoanalysis, and it was therefore clear that they must originate elsewhere. This thought found expression in the name "transference" which indicated that a feeling was carried over in the form of a new application from an earlier and more primitive situation. This view was further confirmed by the discovery that these transferred feelings were not always positive, *i.e.*, feelings of love and sympathy, but that they sometimes took the form of hate; it was found, in short, that affects of all kinds were torn loose from their moorings and reflected to the physician. Through these experiences it came to light: 1. Emotions and affects are transferred, that is under certain conditions they are connected with objects merely because these objects happen to occupy the foreground of consciousness, forming an associative connection, apparently merely for the purpose of

living out the feeling pressing for expression in the patient. 2. That there is an innate necessity of establishing a connection between certain feelings and an object. All this is in contradiction to the naive understanding of the situation. The man in the street says that a person is hated because he is a disgusting fellow, that the situation is rationalized (Jones). Psychoanalysis on the contrary, does not delimit the separate feelings as given naively by consciousness, but regards the affect as a whole and as identical with instinct. In order to understand the psychoanalytic viewpoint it is necessary to abandon the differentiation of the conscious and unconscious as constituting two entirely different spheres. Whether a thing is conscious or unconscious has nothing to do with its reality as a psychic element. The same is found to hold true of psychical and physical processes. If one takes a neutral ground between conscious and unconscious and between psychic and physical, and if these same principles are applied to affects also, then the psychological problems over which there has been so much strife are reduced to naught. We do not cry because we are sad, nor are we sad because we cry, and both the James-Lange and the scholastic formula lose their meaning. Instead of making one process the effect of the other, we regard the affective situation as a typical whole, a constellation or complex, a syndrome of functions and changes in function, which includes conscious processes with a series of other processes—vasomotor, visceral, inner-secretory, and motor, but with recognizable order in the series. And it is just the conscious element which our psychoanalytic experiences teach us, may be wholly absent. The affect is therefore a typical attitude and a typical change in the total constellation, which indeed is not always simultaneously activated in all its elements.

The factors in which the author is here more particularly interested are instinct and object choice. Freud, in his sexual theory, he says, shows us that the infantile affect is without object and that the instinct undergoes various changes before finally becoming attached to a person of the opposite sex; all evidence of a development of instinct irrespective of object. Similar facts may be gleaned from the observation of animal life. Douglas Spalding, followed by L. Morgan, shows that chickens follow the hen because they are so constituted as to desire to follow some object and will run after any moving object that happens to be in the environment, revealing that the instinct is at first general and inexactly oriented, and can find satisfaction with any object, only gradually becoming centered on the one which is biologically significant.

Psychoanalysis has traced development in these directions and has found that the balance of weight rests, with singular consistency, in the individual. The point of reference, then, is the individual himself, or, more exactly, the conditions of the individual, of which two are of greatest importance, an incipient condition, the craving, and a final condition, satisfaction. Between these two conditions belongs the in-

stictive behavior, a series of actions, in lower animals typical and occurring with automatic regularity, but as the scale of animal life ascends, becoming more and more variable. In this whole cycle psychoanalysis sees a dynamic manifestation—a force. This concept of power is one of the oldest tools of which thought has made use, but it has, nevertheless, little content beyond that of having indicated a “something” which gives rise to change; so that when we consider instincts as forces they are brought into relation with nothing that reveals their true nature to our understanding. The value of the dynamic view consists in that it is the idea under which the greatest number of psychic phenomena may be most consequently gathered together. Regarded as forces, then, the instincts may be looked upon as something fluid, as in flux, and there is no more appropriate image for life than the stream of life—where everything takes place in rhythmic waves. The difficulty with the image of fluidity begins, however, when the attempt is made to account for the differences in the instincts—for their diversity. We may avoid this difficulty in part, if, instead of assuming a separate energy for each instinct, we regard the differences as due to changes in one and the same fluid force which sometimes flows quickly, sometimes more slowly, is free flowing or dammed back, is directed forward or backward. But we are still at a loss to explain in the more specific distinctions unless we regard this force as tending toward different objects, as investing different ideas. Then if we wish to characterize the diversity of the forms of the libido by these different investments, they must be considered as essentially belonging together, and this right we have renounced in view of the facts connected with the transference and choice of an object, where it was found that the instinct turns to the most various objects and invests the most various ideas, a view confirmed also by the daily experience of the analyst, who finds that in the flow of the mental life it is not the affects and cravings which are set in motion by the ideas, but contrariwise; forcing us to assume that the instincts and affects decide the direction in which the cycles of action shall unfold, and that they must themselves, therefore, have a definite direction which is characteristic for each. These directions, we immediately see, cannot be covered by the image of a single flowing force, nor can they be adequately explained by a topical view, and the simplest and most natural explanation seems to be to assume for each instinct a final condition of satisfaction which is characteristic for that instinct.

If these considerations are conclusive, the author continues, then the dynamic explanation is nothing more than a convenient image which our language is unable to dispense with, and it is not possible to form a complete and consistent theory from this concept; historical proof of the inadequacy of the concept is the failure of Schopenhauer's dynamic view of the instincts, and also Bergson's, which is closely allied.

Speculations are offered as to the relation of transference to “sug-

gestion," in the light of increasing psychoanalytic experience. In the author's opinion, in which he follows Ferenczi, suggestion is not a dissociation brought about by the hypnotist, but depends on repressed infantile tendencies in the person hypnotized, which are released by suggestion, the processes being a manifestation of libidinous impulses, for the most part arising from the child-father complex, which, by transference enters into the physician-patient relation. If this view be adopted, he says, it would render possible an explanation of many facts which are not satisfactorily accounted for otherwise, and one is even inclined to assume a special "instinct of suggestibility," that is a tendency to yield completely, to become passive. In closing Hattinberg refers hopefully to the contributions of psychoanalysis to the knowledge of the instincts, one of its greatest services having been to throw light upon that sphere of our psychic life where all true psychology must begin.

Fisher, F., Jr. SPHENOPALATINE GANGLION NEUROSIS. [Atlantic Med. Jl., Vol. 28, Nov.]

In a series of fifty cases of sphenopalatine injection, Fisher, Jr., has had sixteen sphe-no-ethmoidal operations subsequent to the injections. So far none of the operative cases have shown recurrence.

Boutarel, Maurice. THE AVARICE OF SYLVIVS. [Aesculape, April, 1924.]

In searching ancient texts to find out the value of medical honorariums, Dr. Maurice Boutarel recalls to us the well known avarice of Sylvius.

He says, "to get rid of the expense of a valet, he brought himself, the necessary anatomic parts for demonstration to the dissecting room, hiding in the sleeve of his gown the arm or leg destined for dissection. We would like to think that this was not from avarice, but from excessive care in guarding his treasures."

"Be that as it may, Henri Estienne tells us that Sylvius received from his pupils *one teston* a month, his pupils numbered about 200 . . . the course brought in to Sylvius two hundred *testons* a month, about 6,600 francs, 1923." (This would be about \$1,320 a month, or almost \$16,000 a year with the franc at par.)

"Sylvius insisted on regular payment, and brooked no delay. He was much blamed for this and his penuriousness soon became proverbial. It is said that he lighted no fire to warm himself, constantly descending and mounting his stairs to keep warm."

"Several hours before his death, while he was delirious, he had his boots put on. Henri Estienne in a pamphlet entitled 'Sylvius Ocreatus' (Sylvius booted), which he published under a pseudonym, pretended that Sylvius wished to cross the Styx, without paying tribute to Charon."

Peiper, A. IRRITABILITY DURING SLEEP. [Med. Klinik, Vol. 31, Nov. 9.]

Peiper made plethysmograms of the brain during sleep in a girl after trephining and in a rhachitic boy. External stimuli caused regularly a

brief increase in brain volume above normal, with smaller pulse; then a decrease in the volume below normal, lasting three to four times longer.

Jung, C. G. THERAPEUTIC VALUE OF ABREACTION. [Br. Jl. Med. Psychol., Vol. II, p. 13.]

Remarks on discussion of W. Brown and McDougall (Vol. 1, No. 1) in which the "traumatic" theory is first discussed and its retreat into the background by Freud himself correctly noted by Jung maintains a hypercritical attitude to the whole "abreaction" development in which he would support McDougall's attitude in part. The "cathartic" method was long ago laid aside in favor of psychoanalysis. The "plucking out" of complexes is an after effect of the cathartic theory and is also no longer the main goal in psychoanalysis. (See "Development of Psychoanalysis." Ferenczi and Rank—Monograph Series No. 41). Transference becomes the alpha and omega of psychoanalysis. Here Jung would emphasize the difficulties which may arise from a too close identification of dream symbolism with crass sexual symbolism.

The "sexual interpretation," he states, is "simple and inexpensive of ideas." Analytic reduction he says is quite easy but of no value for the "finest striving of the soul," in which one might suspect a certain "romanticism" in Jung's attitude. Jung believes that such analytic reduction destroys moral, intellectual and aesthetic values. [Not if real, only if fake. J.] Still "some reductive analysis is needed" but one must pat the patients on the back and begin the new synthesis. An interesting, sincere, instructive essay, but quite "general."

Tomasson, H. THE MIND AND SERUM CALCIUM. [Klin. Woch., Nov. 4. Vol. 4.]

Tomasson determined the serum calcium in 200 inmates of an insane asylum; 80 per cent of them gave abnormal figures. The abnormalities were found most frequently in those with manic-depressive insanity.

Bauer, J. NERVOUS DISTURBANCES OF ORGANS. [Wiener klin. Woch., Vol. 37, Jan. 1, J. A. M. A.]

This well known student of constitutional pathology discusses the mechanism of nervous affections of the organs. An individually different *locus minoris resistentiae*, which is determined by hereditary moments, frequently is the decisive element in the localization of disorders due to increased irritability of the vegetative nervous system. An additional neuropathic or psychopathic predisposition may "fixate" the disturbances, especially under the suggestion by a physician. Words may do a great deal of harm, and rank as regards danger with the knife and drugs. A regular psychoanalysis is necessary only when the psychogenous element is practically the whole content of the neurosis. Abnormal functioning of endocrine glands—especially with the vicious circle resulting from the

fact that they regulate the irritability of the vegetative nervous system and are influenced by it—may be also one of the causes.

Rivers, W. H. R. METHODS OF DREAM ANALYSIS. [Br. Jl. Psychol., Med. Sect., Vol. II, p. 101.]

The author's first sentence is of interest as showing an essential resistance to the subject of his inquiry. He quotes Freud—quite out of the context—as saying that some patients dream dreams intended to circumvent the analyst. This notion, taken quite out of its proper setting, is utilized to show that the dreamer is “continually” interested in trying to dream dreams to support the analyst's point of view. This amusing deduction—supported here by quoting Stekel—is one of the most striking instances of Rivers' essential misunderstanding of the dream process. [It would be just as reasonable to argue that a patient secretes a special variety of bile in order to digest the analyst's dinner, be it roast pork or what not, just to please him. Individual determinism and individual experience are entirely lost sight of in this farcical introductory statement. J.]

Rivers then goes on to state some of his own dreams and his own experiences, and then makes some efforts to tell what they mean. He speaks, “as if” (Vaihinger) of certain hypnagogic states—not knowing of Silberer's many very thorough analyses of these states and of peculiarities of his experience.—[Really commonplaces in psychoanalytic practice] and then “there can be but little question,” “there is no doubt” and other dogmatic statements about dream processes which are quite nonsense. An abstract is not supposed to be a criticism, but Rivers' contribution is so naive and amateurish that in spite of his recognized anthropological position, his authority to pronounce upon psychoanalytic situations is quite problematical. The paper is worth reading as showing how a really sincere scientist gropes bewilderingly in a new field, which allied to his own, offers many parallels which by reason of his inexperience are but dimly glimpsed.

Engelen. THEORY OF HYSTERIA. [Münch. med. Woch., Vol. 72, Jan. 16.]

This paper upholds Sahli's mechanistic conceptions of hysteria as caused by functional lesions of anatomically distinct parts of the brain. This explains the fact that hysterical patients produced symptoms resembling epidemic encephalitis long before the latter disease was known to neurologists.

Edelberg, H. and Galant, J. S. PSYCHOTRAUMATIC DYSMENORRHEA. [Münch. med. Woch., Vol. 72, Feb. 20.]

Four cases of dysmenorrhea are here reported all of which began after emotional traumas (such as house burning, police investigation, etc.). Atropin, rest and psychotherapy are indicated in the condition, which persists usually longer than other signs of the psychoneurosis.

BOOK REVIEWS

Prinzhorn, Hans. BILDNERIE DER GEFANGENEN. STUDIE ZUR BILDNERISCHEN GESTALTUNG UNGEÜBTER. [Axel Juncker, Verlag. Berlin.]

The author is well known for his contributions to the psychology of the artistic productions of the psychotic and here contributes an interesting volume rich in pictures (174) illustrating the various forms of artistic activity among the interned criminal classes. It is a parallel study to his previous volume and some pages are devoted to similarities and differences in the respective groups.

These drawings in black or white or in color are taken from the walls of the prison cells, from carvings upon wooden doors, or plastic productions made in clay or bread or other worked up material. Tattooing plays a not inconspicuous rôle and some quaint sign language symbols of the tramp are included. Some of the material has been taken from the police museums of various European cities and playing cards offer some suggestive data.

The illustrations are particularly useful for the development of the author's discussion of the significance of these productions to the mental life of the individual criminal.

It is an extremely interesting work and one calculated to enlarge one's conceptions of the inner life of many an antisocial individual who gets into jail through the medium, usually of an undeveloped form of artistic production.

Stekel, W., Missriegler, A., and Gutheil, E. FORTSCHRITTE DER SEXUALWISSENSCHAFT UND PSYCHANALYSE. [II Band. Franz Deuticke, Leipzig and Wien.]

We have had occasion to call attention to the initial volume of these "Advances." A second volume is before us filled with a variety of interesting studies. Stekel himself contributes upon Transference, Annulment and Repression, The Psychology of Headaches, The Breaking down of the Incest Complex—interesting particularly to compare with Freud's "Passing of the Oedipus Complex" [this article contains an analysis of a morphinist by Graven]. Analytic Observations upon Peer Gynt, and a very personal note upon the History of the Analytic Movement.

Among the others of the 31 studies Missriegler has one with Graven upon a case of Smoke Phobia and one upon "Falling in Love with Authors." Marcinowski writes upon Dream Analysis and also a case of the Feeling of Responsibility. Bjerre has a penetrating study upon Sleep. Disturbances from the Synthetic Viewpoint.

Migraine, Sadomasochism, Narcissism and Homosexuality, Analysis of a Criminal, Psychology of the Prostitution Complex, Epilepsy, Dipsomania, and Psychogenic Dermatoses are among the titles of other studies.

This collection offers much for the practising psychoanalyst especially as it deals, for the most part, with clinical cases. Those who enjoy a bit of gossip will read Stekel's comments upon the history of the psychoanalytic movement with mixed feelings according to their individual predilections.

Freud, Sigm. EINE TEUFELSNEUROSE IN 17 JAHRHUNDERT. [Internationaler Psychoanalytischer Verlag, Wien.]

A reprint of an interesting excursion into the study of a mass psychological reaction made by Freud which shows the genius-like insight into such movements. All students of mass psychological behavior will find much to reflect upon in this scholarly presentation.

Peck, Annetta W., Samuelson, Estelle E., and Lehmann, Ann. EARS AND THE MAN. STUDIES IN SOCIAL WORK FOR THE DEAFENED. [F. A. Davis Company, Philadelphia.]

Social work has been of unprecedented growth in the United States. With our great material success there has developed an equally vital altruistic series of endeavors. The present work outlines some lines along which alleviation of the discomforts and disadvantages of deafness have been met by such philanthropic workers. The work speaks for itself.

We here give it notice as a worthy contribution to sociological medical science and bespeak for it a wide audience of readers. It is no sloppy sentimental book but an honest record of good work.

Keyser, Cassius J. THE HUMAN WORTH OF RIGOROUS THINKING. [Columbia University Press, New York. \$3.25.]

This is a topsy-turvy world, *i.e.*, the world of the book-reviewer. No sooner have we disposed of a thick treatise upon the "Nature and Results of Religious Psychotherapy" than this quite antithetical work comes under our vision and from an author who has already written an excellent work upon "Science and Religion; The Rational and the Superrational." We can gamble that there were more people interested in the Eucharistic Congress recently held in Chicago than ever heard of Dr. Cassius J. Keyser, but by the same token they never could have gotten there, fed, clothed, transported, and even been alive, were it not for a very few people who like Dr. Keyser knew something of the "Human Worth of Rigorous Thinking." It is not a far fetched statement to make that at least the lives, health, and freedom of action of 10,000 people is dependent upon *one human brain that does rigorous thinking*, and the grimmest part of the joke is that each one of the 10,000 morons has an idea "he's It." He never heard of the Adrian Professor of Mathematics at Columbia University, or of Euclid, or Galileo, or Newton, or Leibnitz, or

Descartes, and yet these are the real brains that have contributed to the possibilities that permit the 10,000 to go on and live and enjoy life.

This may seem a strange introduction to a book review—mostly introduction—for the few, however, this is a fascinating series of essays, fortunately reprinted, in which a mathematician deals with humanity in a most unexpected and stimulating manner.

In a rhapsodic mood one might say that rarely have we read so intriguing a series of essays. For neuropsychiaters who claim that their interests in mankind are universal, we heartily commend this thought provoking work.

Eitingon, Max. ZWEITER BERICHT ÜBER DIE BERLINER PSYCHOANALYTISCHE KLINIK. [Internationaler Psychoanalytischer Verlag.]

The psychoanalytically oriented reader will be able to gather from this short report much about the organization and possibilities of psychoanalytic clinics. In the next ten years these will be organized in the larger cities of the United States. The Berlin model is well worth serious attention.

Rank, Otto. DIE DON JUAN GESTALT. [Internationaler Psychoanalytischer Verlag.]

Don Juan has always been an interesting figure—*i.e.*, since drama and comedy have been current. Possibly he exists among our simian prototypes, at least some zoölogists seem to catch glimpses of his tendencies in their museum charges.

As seen behind many a yellow sheeted account of tragedy his figure looms large, and whereas maleness would like to pass the buck and shout "*cherchez la femme*," there is always a seducer for every female seduced.

Hence the interest in this very thorough psychological study based upon psychoanalytic as well as upon historical dramatic, poetic and musical material. Rank's well known monograph here appears in a revised and enlarged edition.

Lortsch, S. LA PSYCHOTHERAPIE RELIGIEUSE. SES RESULTATS—SA NATURE. [Librairie Fischbacher, Paris. 12 fr.]

Medicine and religion came out of the past in very close liaison; this relationship exists to-day in very large degree and the terminology of our present medical sciences is replete with theological and magical phrases and conceptions.

The most deeply grounded of these conceptions is "faith," in its theological aspect. Only in present day studies of metapsychological problems connected with the unconscious dynamics of transference has any adequate analysis of this theological abstraction been afforded medical science. And for the most part medical science does not know what this means. Certainly the author of this book does not, although his bibliography contains a few psychoanalytic titles. For

him religious faith cures only when it contains supernatural features. What "supernatural" features are is left unanalyzed.

Schohaus, Willi. DIE THEORETISCHE GRUNDLAGEN UND DIE WISSENSCHAFTSTHEORETISCHE STELLUNG DER PSYCHOANALYSE. [Ernst Bircher, Bern.]

Every one who has followed the psychoanalytic movement recognizes that it has met with much criticism. The critics, informed as well as the reverse, first appeared in Germany and Austria. American activities then manifested themselves along similar lines, although the uninformed group greatly predominated. These were before the war. Then followed the English group, with such fairly informed students as Rivers and the balderdash of Wohlgemuth. Along precisely similar patterns Italian, South American and French material appeared. The repetition of the same notions followed an almost monotonous stereotypy. Among the adverse critics the conception of the unconscious was never appreciated and that a scientific analytic science was growing into fairly definite form as a result of a clearly outlined method was entirely unsuspected.

The present work is of interest in that the author recognizes this latter principle and here contributes an earnest effort towards its presentation. The author shows that through the psychoanalytic method the science of psychology has been greatly advanced chiefly in two directions. New fruitful points of view have been given and avenues of research of signal importance been opened up and furthermore important gnostic material has been added to psychological science.

The genius of Freud's comprehension of the complexities of the higher psychical activities is responsible for these important discoveries and additions to knowledge. The author perhaps lays too great a stress upon what he calls intuitively arrived at conceptions, and less upon the natural history method of the gathering of great masses of data which is apparent to every active worker in actual psychoanalysis. Hence the accent in this very interesting study is perhaps slightly misplaced at times in spite of an otherwise quite well worth reading series of observations. These observations founded largely upon Häberlin's critique contain much resistance material which cannot be entered into here in detail.

Indeed, it is quite open to serious question whether Häberlin's formulations as to what constitutes a scientific method will hold water. Häberlin is entirely too much of a scholastic. Pragmatic scientific method would neglect him quite as entirely too Aristotelian and a terribly old fashioned absolutist. Hence the vaunted virtues of a model are at once reduced to little more than mere assertions.

Notwithstanding this quite unstable foundation we have read the monograph with much interest. Naturally from the scholastic point of view Freud's relativity ideas are anathema; the author speaks of them as pseudophilosophic positions—which is to smile. Freud as a pragmatist is also under fire, even though the author is gracious enough to state he is not an "extreme" pragmatist.

Then Schohaus takes a shy at Jung and his psychological types, and speaks of him as only slightly involved in pragmatism. Stekel is a dyed in the wool practitioner, but no scientist; even though he may cure patients, he does not follow the "rules" of "science." As if Vaihinger has not shown what a sorry mess most "science" is—a hodgepodge of "fictions," useful as well as useless.

But we need not progress further. The book is worth reading even if the author shows little acquaintance with "casuistic material."

Freud, S. ZUR TECHNIK DER PSYCHOANALYSE UND ZUR METAPSYCHOLOGIE. [Internationaler Psychoanalytischer Verlag, Leipzig, Wien, Zurich.]

The present collection of papers most opportunely brings together the various contributions which Freud has made upon the technic of psychoanalysis and his newer studies which are aptly termed metapsychological.

These have appeared at different periods in the evolution of the psychoanalytic technic and in different places. They are all available in the *Gesammelte Schriften*, some in the Hogarth Press four-volume series in English. But nowhere else are they so conveniently grouped as in the present reprint.

The first, upon the Freudian Psychoanalytic Method, appeared in 1904. Then follow Upon Psychotherapy, The Future Chances of Psychoanalytic Therapy, Wild Psychoanalysis, Method of Dream Interpretation in Psychoanalysis, Dynamics of Transference, Advice to the Physician in Psychoanalytic Treatment, On False Recollections during Psychoanalytic Work, The Beginnings in Treatment, Recollection, Repetition and Working Through, Notes on Transference Love, Ways of Psychoanalytic Therapy, and Earlier Historical Notes of Analytic Technic.

The sections upon Metapsychology deal with Some Remarks upon the Conception of the Unconscious in Psychoanalysis, Instinct and Instinct Fate, Repression, The Unconscious—dealt with in seven short aphoristic notes, Metapsychological Developments of the Dream Problem, and Sadness and Melancholy.

The Psychoanalytic Press has done a useful thing in bringing these related subjects in one handy volume.

Roffenstein, Gaston. DAS PROBLEM DES PSYCHOLOGISCHEN VERSTEHENS. [Kleine Schriften zur Seelenforschung, Vol. XV, Julius Püttmann, Stuttgart, 1926.]

This very compact and yet full monograph of 160 pages would present the problem of psychological understanding from certain newer aspects which have been developing chiefly in German psychological and philosophical circles.

As many of our readers know, revolts from older association psychology have been fairly numerous, of which Behaviorism is one best known in the United States. Others, however, have been no less important, and the work of Dilthey and Husserl has been fundamental

in these newer orientations which have carried the names of phenomenism and configurationalism and others as well.

The present work is compared or arrayed with the larger efforts of Kronfeld and Binswanger, and gives us some most interesting reading. Husserl broke from the older methods when he maintained that the psychological frame, to use an Einsteinian phrase, had its own methods which should not ape those of the other natural sciences, and Dilthey at least thirty years ago also claimed that the conceptions of psychology were peculiar to itself and if put into the biological or natural history frame were senseless. Out of these notions grew the "Gestalt" conceptions. Roffenstein would introduce his presentation from this general standpoint and thus break from the atomistic-associational conceptions which have been the backbone of nearly all psychological notions since the days of Wundt.

Thus the swing away from intellectualistic analytical methods towards inner experiential intuitive situations has come about. The inner structural empathy is experienced—not in the sense altogether of the mystic's convictions, but at least not rejecting an aspect of this category. Thus a pure psychology is sought for and not a bastard psychophysiology.

Whether this partitioning is logical, advantageous, or possible the author makes a part of his program.

One "explains" through intellectual processes, but one "understands" by a much more complicated emotional interrelationship through the feeling into the object, in a sense comparable to Bergson's portrayal of the intuitional process.

Thus the psychical processes of the mechanistic scientist are put in contrast to those of the artist, speaking in most general terms. The static type is allied to the phenomenology of Jaspers. When this student of the problem undertook to study of Strindberg and von Gogh to us it seemed ghastly.

In his second chapter the author would deal with the understanding of the other person—*Einfühlung* or Empathy. He discusses acutely the various modern contributions to this problem, Geiger, Lipps, Volkelt, Spranger, and others, with special emphasis upon Scheler's conception, for whom the I and the Thou are identical. In all this we miss the directness of Schiller's humanistic approach patterned after Protagoras.

It is only when the author comes to the conceptions of the "Unconscious" that we feel he is more than just threshing the dry straw of verbiage. Even here one fails to find him come to grips with actual situations, so strong is the illusion that one can hope to understand the universe.

He opens his concluding chapter with the phrase that "all psychology must lead to the instincts and therefore must link up with biology." Between reflex and instinct, between instinct and will, there are but continuous series of processes. This he would develop.

This very inadequate series of phrases about this book gives no indication of its very scholarly character. The reader will get a great deal out of it, especially pertaining to recent discussions of German

psychological conceptions. For this it is well worth reading, but to one not soaked in the same it is difficult reading.

Stekel, Wilhelm. FRIGIDITY IN WOMAN IN RELATION TO HER LOVE LIFE. Authorized English Version by James S. Van Teslaar. 2 vols. [Boni and Liveright, New York.]

The original German work by Stekel has been reviewed in these columns. The present "version" is a somewhat abridged translation. By such condensation much has been gained, a little lost, for Stekel, with all his acuteness and cleverness, has the journalistic trend to verbal expansion.

Practical experience with this hodgepodge of a world, that "muddles through," shows that no more vital issues are met with than those of the love life. One might venture to state that if all of the literature of the world were statistically surveyable at least 75 per cent of it would be found to deal with issues of the love life, using this term in the large sense. Certainly the student of behavior who deals with happiness and its opposite runs up against faulty adjustments in this sphere in even greater percentage statements. Hence the rationale of the present work, which is incomparably superior, in the main, to any other known to us, in its limited discussion to a particular aspect—*i.e.*, frigidity in woman.

In spite of all of the inadequacies which may be summoned up in criticism—and they are many—the positive gain far outweighs the sum total of the faults that may be found. Hence we feel certain that this work will prove of great importance to innumerable individuals whose inner maladjustments to the love life have entailed great discomfort and disease—in the psychical as well as the somatic sense. It at least will start people thinking that a better comprehension is obtainable and thereby help may be intelligently sought for—and in certain quarters found.

Helson, Harry. THE PSYCHOLOGY OF GESTALT. [Am. Jl. Psychology, Offprint.]

Among the many works that have been piled upon the reviewer's desk, some larger, some smaller, this particular reprint from a series of articles in the American Journal of Psychology, Vol. 36, 1925, and Vol. 37, 1926, claims a very definite and unique interest.

Although the readers of this Journal are primarily clinicians, doing their work with patients suffering from nervous and mental disorders of major or minor severity, yet many are desirous of following, if but from afar, the movements in mental activities envisaged under the broad term of psychology.

Among these movements, possibly one of the most intriguing, has been that called the "Gestalt" or "Configurational" psychology. The vast majority of these clinicians have fed from the bottle of "association psychology." It has built up the bone and muscle of their thinking. The Gestalt psychology is one of the most radical of the revolts against this general point of view, and although, as yet,

it has been introduced into medical conceptions in but few instances, notably by Gelb and Goldstein in their analyses of certain aspects of aphasia, nevertheless it promises to alter the general point of view quite materially.

The present volume presents in a very clear manner the features of this movement, and we can most heartily recommend it to those readers who would try to keep in touch with such trends of thinking.

Eagleton, Wells P. CAVERNOUS SINUS THROMBOPHLEBITIS AND ALLIED SEPTIC AND TRAUMATIC LESIONS OF THE BASAL VENOUS SINUSES. [The Macmillan Company, New York.]

The extreme severity and usually fatal termination of this type of intracranial situation makes this monographic presentation most timely. As expressing the experience of the author, which has been extensive, it is most serviceable. Furthermore, by reason of its completeness, its exactness, and its minute analysis of the many complicated appearances, it is a definite contribution to neurological surgery.

Twenty-five personally observed cases make the material from which this study is built. There were twenty-one deaths with twelve autopsy studies. The study chiefly brings out that cavernous sinus phlebitis must be considered as a group of diseases, much as the extension of the term nephritides; this is of special significance if early diagnosis is to be of service in indicating the way of surgical relief. In this early diagnosis the classical symptoms of exophthalmos, edema of the lids, and chemosis may or may not be present, depending on whether the sinus is suddenly and completely obstructed by an acute septic process, or gradually obliterated by a compensatory thrombus.

An early diagnosis in the case of slow involvement without the classical manifestations of exophthalmos (the most promising type for surgical intervention) necessitates a careful study of the following mechanical factors which determine the symptomatology: (a) the path of entrance of the infection into the sinus; (b) the part of the sinus first attacked, and (c) the alterations in the adjacent tissue that occur as a result of the venous anastomoses of the sinus.

And finally the necessity of treating the phlebitis not only by drainage but by placing the inflamed venous radicle at rest by ligation of the common or internal carotid artery.

Van Gehuchten, A. LES MALADIES NERVEUSES. Nouvelle Edition revue et mise a jour par le Dr. P. Van Gehuchten. [Libraire Universitaire, Louvain.]

This textbook, which rose sphinx-like from the flames of Louvain, here is revised and brought to date by Van Gehuchten's son.

We have already called attention to the excellent qualities which distinguish it, particularly its clear, simple, and yet thoroughly scientific method of presentation. It is not a system, nor yet a work for research workers, but an admirable portrayal of the chief syndromes met with by students of neurology. It is a very satisfactory treatise for elementary workers in neurology.

Hovelacque, A. ANATOMIE DES NERFS CRANIENS ET RACHIDIENS ET DU SYSTÈME GRAND SYMPATHIQUE CHEZ L'HOMME. [Gaston Doin et Cie, Paris, 1927.]

For home consumption a beautiful volume of 880 pages with 89 figures in the text and 121 plates (in two volumes for export). It is the result of many years of labor. The author has not only minutely dissected out his material, but he has carefully compared his findings with those of others and thus has paid great attention to the many variations in the structures described, giving it a completeness rarely found in anatomies of the nervous system.

The work starts with some embryological considerations of the peripheral nerves and with the introduction of comparative anatomical material, thus enriching and enlarging the conceptions offered by the embryological method. Thus ontogeny and phylogeny are interestingly interwoven rather than being considered in separate chapters. This is an important and valuable method of presentation. The cranial nerves are then discussed in the same manner.

The dissections proper and the beautiful plates begin with the cranial nerves. Here particular attention is given to the surgical anatomy. One can gain an idea of the completeness of the treatment in observing that nearly 100 pages are devoted to the consideration of the trigeminus alone. The facial has 40 pages, and we note that Ramsay Hunt's conception of the sensory distribution of the seventh nerve is accepted. The two chapters occupy the first 270 pages, with 58 figures and 36 plates.

Chapter II deals with the spinal nerves, the general metameric distribution first claiming attention, then the plexuses, and finally the nerve fibers themselves. The plates of the plexus dissections are very beautiful. The full considerations given to the variations in the plexuses are of the highest scientific and practical value.

With page 650 the dissections of the sympathetic begin, and these complete the book. The author sustains the view of a complete neurovegetative reflex arc and maintains a sympathetic and parasympathetic innervation in all of the body metameres. A bibliography of 60 pages completes the book, with fortunately, what is often lacking in French works, an excellent index.

One could fill several pages of panegyrics upon this volume. It is a classic and should appeal not only to anatomists, neurologists, and surgeons, for whom it is indispensable, but to every student of medicine. It is a credit to the best traditions of French scholarship.

Craig, Maurice, and Beaton, Thomas. PSYCHOLOGICAL MEDICINE. A MANUAL OF MENTAL DISORDERS FOR PRACTITIONERS AND STUDENTS. Fourth Edition. [P. Blakiston's Son & Co., Philadelphia.]

It is a little over twenty years ago that the first edition of this manual was published. It has shown in its successive revisions some of the advances that have been made from time to time in certain quarters in psychiatry. As a manual for students one would not

expect to find in it any comprehensive survey of various trends which have characterized these advances. The authors have chosen a direct, more didactic and pedagogic mode of approach. As such we have an excellent descriptive manual at rather simple levels but in the main conscientiously and adequately set forth for the purposes in view.

It is very well written on older lines of thinking with evidences here and there of getting into a more dynamic setting. There is no bibliography or indication that the conceptions set forth on almost any page are the subjects of keen and critical discussion in psychiatric scientific circles. In spite of this the authors have chosen here and there with much discrimination. The manual is eminently Kraepelinian, with a dash of the newer dynamic attitudes, indicated but not integrated. We wish they had really laid the ghost of the "normal mind" fiction, but after ragging it about a bit they seat it on the teacher's bench and go on with it as of old.

There are not a few of these irritating and antique attitudes still left over from scholastic psychology and an old fashioned psychiatry with a number of old untruths not yet weeded out. If these faults of understanding could be eliminated one would have a most excellent short descriptive manual.

Hildebrandt, Kurt. *GESUNDHEIT UND KRANKHEIT IN NIETZSCHE'S LEBEN UND WERK.* [S. Karger, Berlin.]

Few writers in comparatively recent times have made such a stir in the cultural world as Nietzsche. Anyone who doubts this but needs go to any adequate library and see the colossal accumulation of Nietzsche literature.

That he was a genius but few can controvert. How much his genius was destroyed by his mental illness, and how much his mental illness may have contributed to his insight into the unconscious processes where all genius resides will remain for many years to come a fascinating field of inquiry.

The present monograph is a noteworthy contribution to both sides of this problem. Noteworthy because of the author's insight that both situations needs be taken into serious consideration if a true estimate of the value of Nietzsche's work is to be obtained.

Here may be found a most sympathetic and understanding discussion of Nietzsche's constitutional and dispositional features; his neurosis and his psychosis, and many valuable sidelights thrown upon the evolution of his mental activities, particularly when the conflict with the probable paretic process was in the making. Here the psychiatrist has a special right to enter into the domain of the analysis of genius and to more accurately delimit the tenuous borderland that is thought to separate genius from mental disorder—a subject of engrossing interest since the days of Aeschylus, who wrote of the Mad Hercules and the "Morbus sacer," to the present time.

In more than one aspect, it is to be regretted that the work of Möbius concerning Nietzsche should have received so much attention and belief, and it is to be welcomed that the present study shows how grievously Möbius had misunderstood the various issues involved.

It is therefore with special emphasis that we claim the present work to be a most valuable contribution to this much discussed question, and for lack of space here, close by claiming that no one interested in the problem of artistic construction, as a mental product, can justifiably overlook this present monograph.

Cassirer, R., Henneberg, R. KRANKHEITEN DES RÜCKENMARKS UND DER PERIPHERISCHEN NERVEN. Elfte Heft. Diagnostische v. therapeutische Irrtümer v. deren Verhütung. J. SCHWALBE. Zweite verbesserte Auflage. [Georg Thieme, Leipzig.]

The first edition of this very useful monograph by Cassirer has been reviewed. Henneberg has edited the present edition and contributed materially to its value. Tabes, Multiple Sclerosis, Tumors, Poliomyelitis, Myelitis, Injury, Progressive Motor Disturbances, and the Muscular Atrophies are discussed, chiefly as to diagnosis, in the first section; Peripheral Nerve Lesions in the second.

To neurologists who are aware of the many diagnostic pitfalls this contribution is twice welcome.

Pilcz, Alexander. LEHRBUCH DER SPEZIELLEN PSYCHIATRIE FÜR STUDIERENDE UND AERZTE. Siebente, umgearbeitete Auflage. [Franz Deuticke, Leipzig u. Wien.]

Pilcz dedicates his work to Wagner v. Jauregg and indicates it as representing the teachings of his school. We have had the pleasure of saying this is an excellent text for the purposes outlined, namely, a clear, didactic short series of descriptions of the principal issues that come up in the field of psychiatry. He gives no general portions, but goes directly at the main syndromes or diseases. Manic-Depressive, Amentia, Alcoholic and Thyroid Psychoses, Paranoia, Dementia Precox, Paresis, Senile Dementia, Arteriosclerotic Psychoses, Brain and Mental Disease, Epileptic, Hysterical, Psychopathic Inferiority, Congenital Defect States, Drug Therapy and the Austrian Laws—these are the chapter titles in the 320 pages of the book.

The work is not one for the specialists. No indication of the many problems under discussion are here present. The descriptions, however, are unusually clear and concise and for an outline of a purely static and descriptive psychiatry it is admirable.

Potet, M. HYGIÈNE MENTALE. [E. Le Francois, Paris.]

Mental hygiene has begun to be recognized as of importance in the world. It still lags behind in the efforts of medicine in general, but the day seems not as far off as it appeared a few decades ago when the mental health of mankind was taken for granted and physical health seemed the all important issue. *Mens sana in corpore sano* are deemed all that was necessary. It now seems possible that the opposite slogan a "healthy body is dependent upon a healthy mind" may be of equal if not of superior import.

The "war" raised the issue with a bang. It threatens to slide back into the old grooves of *laissez faire*.

Hence the importance of this comparatively large book (600

pages) which first details the historical development of the movement which as is well known sprang from the work of Clifford Beers in the United States and now has spread over the entire world. The author gives the details of this movement in its gradual organization throughout the various countries of the globe.

The greater part of the work is devoted to the methods of mental hygiene. Here is to be found a masterly collection of nearly all of the various psychiatric and psychological modes of testing mental activities. These are grouped in the second section of this treatise. The Principles of Mental Hygiene are dealt with in a third section. Psychopathies, their definition, etiology, hygiene of the intelligence, of the affectivity, and mental work are here discussed. Section four deals with various applications. Eugenics, child study, professional activities, the family, the army, navy, and other collective applications are exhaustively dealt with. The applications to special anomalies are taken up in the next section. Psychopaths, incomplete psychotic developments, anomalous children, various drug habits, criminality, etc., are exhaustively discussed in the final section.

Each section has an extremely complete bibliography. There are masterly name and subject indices, and altogether we have a masterly presentation of the entire situation, which demands our greatest admiration. It should find a place in the library of every worker interested in the human mental achievements and their difficulties.

Blanton, Smiley, and Blanton, Margaret Gray. CHILD GUIDANCE. [The Century Co., New York, London.]

The average healthy child, so-called "normal," if such a fiction can be made a useful conception, has been neglected in works of child psychology. In this field the outré, the strange, the anomalous, the sick have been treated, all too frequently and it is a distinct relief to find that the author would here deal with almost any child on the basis of practical experience, for almost any child may become a problem child from little fault with his germ plasm but from many faults in his surroundings.

Our childhood lives in all of us, but is so soon smothered by the rigors of adaptation that it tends to be forgotten, and too many adults are unable to get into rapport with the rising generation. This defect is here dwelt upon and efforts put forth to show how it may be remedied.

We cannot spare the space to tell all of the valuable ideas which this book contains. They are too many. One should possess it and read it. It is by far one of the best works of its kind that has appeared on the reviewer's table.

Fox, George Henry. REMINISCENCES. [The Medical Life Press, New York.]

Biography and autobiography have been cultivated for many centuries, but of the lives of American physicians there have been too few. Poets, artists, literary and political figures have crowded the stage; the medical lights have burned too dimly. And yet, were

it not for the physician many of these lives would never have been saved to give their gifts to the cause of culture and civilization. It is a healthy sign then that in comparatively recent years this deficit is being altered.

Dr. George Henry Fox was one of the outstanding figures in American dermatology and one of the group that at the end of the last century made the College of Physicians and Surgeons of New York famous.

In simple and straightforward language Dr. Fox has given us a charming sketch of his boyhood, his medical studies and his later medical activities. New York State cradled him and New York City was the scene of his later development.

His sketch of the life of Dr. Piffard serves to preserve an aspect of this delightful character, which for all who knew him is thrice welcome.

We recommend this delightful book and hope to be able to read many more such in the not too distant future.

Balyeat, Ray M. HAY FEVER AND ASTHMA. [F. A. Davis Company, Philadelphia.]

This is a small manual chiefly devoted to the "sensitization" hypothesis as an exclusive and inclusive cause and clue to therapy for hay fever and asthma. The reviewer calls to mind the first individual he saw with hay fever, while still a student of medicine. It was in the country. A youth of nineteen was visiting the reviewer's aunt. We walked three-quarters of a mile to the post office. During the walk the youth was expressing his delight that he had found so charming a place in which he could live at that time of the year without having his usual attack of hay fever. He was tired of New Hampshire and especially Bethlehem. He had been here three weeks and had been absolutely free from all symptoms. In response to my innocent inquiring why he had the hay fever, he said, "It was because of ragweed, and because there was no ragweed here, he did not have the hay fever." Still innocent, I remarked, "But you have been walking with me about a mile and both sides of the road are almost dense with two species of ragweed." I could not forbear perhaps to air my botanical knowledge.

In half an hour he had a violent attack of hay fever and went off to Bethlehem, N. H., where there is also ragweed, for I have collected it there. Many times I have thought of the incident and since then one has read of the "sensitizations" to everything under the sun.

Later study concerning the phylogenetic importance of the rhinencephalon and the paleostriatum have served to strengthen the belief that much more subtle and deeper connections exist between many things and smell than can be explained by the hypothesis of sensitization. What these are one does not presume to say. One can only muse and wonder how insufficient are the present views concerning both hay fever and asthma, for up to the present time, having seen many, many cases of asthma and hay fever, we have yet to see one single one "cured" by the "desensitization" methods alone. In a

few cures—the results came about through other channels—chiefly affective.

Péron, Jean-Noël. CONTRIBUTION A L'ÉTUDE DES SYNDROMES DES NERFS DE LA QUEUE DE CHEVAL. [Amédée Legrand, Editeur, Paris.]

Dedicated to father, grandfather and great grandfather, all physicians of note, the grandfather, Magnan, known to psychiatry all over the world, this painstaking and complete thesis bears witness to its striking ancestry. Its immediate cradling is from Guillain's service in the Salpêtrière, and reflects the brilliancy of this new occupant of the Charcot chair.

After a brief, all too brief, historical introduction the author gives a résumé of the anatomical structures of the cauda equina, followed by a brief physiological summary.

The syndromy, peripheral palsies, sensory changes, reflex losses, sphincter and genital disturbances, is then discussed in terms of localization of structures involved. Four types are distinguished: (1) complete lumbosacral, corresponding to a lesion extending from II.L. to last sacral root; (2); middle lumbosacral, corresponding to lesions of L₅ v S₆; (3) pure sacral, involving the last four roots, and (4) partial syndromes: (a) hemisyndromes, and (b) superior lumbar syndromes with integrity of the sacral structures.

In the light of these syndromes the author then progresses to the etiological groups: Traumatic, Tumors, Bony Compressions, Syphilis, and Localized Meningeal Reactions.

Diagnosis, Prognosis and Treatment, and Case Reports, 59 in number, with a Bibliography complete this valuable study. The utilization of newer methods such as lumbar puncture, radiography with lipiodal, clearer delimitation of the posterior tibio femoral, posterior peroneofemoral and mediopltantar reflexes, chronaxic testing, etc.; these all contribute materially to the value of this splendid monograph.

Huldschinsky, Kurt. DEMENTIA RACHITICA. STUDIEN ÜBER DIE SOGENANNT ZEREBRALE KOMPONENTE DER RACHITIS. [Verlag v. S. Karger, Berlin.]

It has been observed for years that the mental development of many rachitic children shows anomalies of definite character. These are here studied in great detail and particularly an effort is made to erect a more or less specific type of psychotic trend or coloring as observed in the early and late developments in these rachitic individuals. This is a bold program and an initial one into psychiatric "Krankheits begriffe" as applied to the "psychical syndromy" of children with rachitis.

The author first separates three stages in rachitis. In the florid aspects he would signalize a catatonic syndromy; a mental enfeeblement characterizes the more chronic stages, and a paranoïd development is a frequent attainment in the late stages.

He studies in particular: A. Psychical Symptoms, B. Psychomotor

Symptoms, C. Psychosensory Symptoms, D. Vagosp sympathetic Symptoms, E. Neuromuscular Symptoms, and F. Trophic Symptoms, and in their synthetic grouping would erect his "disease."

This is a very careful and thorough piece of work and should interest neuropsychiaters and pediatricians particularly.

Niessl v. Mayendorf, Erwin. UEBER DIE PRINZIPIEN DER GEHIRN MECHANIK. [Ferdinand Enke, Stuttgart.]

This is a short, intriguing, and readable inaugural address given by the author in Leipzig in 1926, dealing with the gradual development of our knowledge concerning brain mechanisms in their adaptive capacity to control the environment for man's conduct.

Maeder, Alphonse. PSYCHOANALYSE UND SYNTHESE. [Verlag Friedrich Bahn, Schwerin i. Mecklenburg.]

The author has added as a subtitle, The Reconstruction of the Personality on the Basis of Its Analysis; this 26-page pamphlet being an address given by Dr. Maeder at a conference of physicians and theologians held in Berlin in 1926. As an indication that physicians, especially those interested in the psychology of the unconscious, have something to say to theologians, it is of moment. Such a meeting of heretofore conflicting attitudes is an augury of progress. That the "people," as a whole, have come to suspect both "professions" goes without saying. Bernard Shaw's quip that "every profession is a conspiracy against the public" is an evidence of its emergence into consciousness. Such being recognized, how are the "camps" to get together? This is the "substance" of this endeavor, since neither priest nor doctor enjoys the full confidence of the "people." How the breach may be healed Dr. Maeder would tell us in this delightful essay. Freud is acknowledged as the genius whose conceptions would start the welding process. His emphasis upon the "instinct" life afforded the early ideas towards an amalgamation of the differing trends. Here was a meeting ground outlined for sociology, mythology, philosophy, theology, pedagogy, artistry, and all of the manifold activities of the human psyche.

But since every new idea brings in its train a multitude of new problems to be solved, possibly even greater than those it replaced, schisms of gnostic and affective aspects arise. Hence the Zurich schism of Jung and his pupils, the which Maeder would sink to ethnic occidental-oriental ambivalent attitudes which he indicates but does not really resolve, beyond the apodictic statement of the "reform" of psychoanalysis by Jung. To this thesis he advances and presents an excellent outline, not without some false emphases, of the development of the Zurich conception.

N. B.—All business communications should be made to *Journal of Nervous and Mental Disease*, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

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ORIGINAL ARTICLES

BRACHIAL PLEXUS OBSTETRICAL PARALYSES AND REPORT OF A CASE ¹

BY VINCENT GILIBERTI, M.D. ‡

OF NEW YORK, N. Y.

Of the various types of birth palsy, brachial plexus paralyses form the second largest group. They may occasionally occur in normal confinements but only when such a rare combination exists as a contracted pelvis, a very great bisacromial diameter and prolonged labor. Their most frequent occurrence is, however, in those cases requiring artificial aid and occur more frequently in head, rather than breech, shoulder, or foot presentations.

The mechanism which is most often responsible is traction upon the brachial plexus due to abduction, elevation and backward movement of the arm at the same time that the head is being bent towards the opposite side. Any manipulation which will cause compression or stretching of the brachial plexus while attempting to free the arm or deliver the shoulder or the after coming head may also produce brachial plexus injury. The introduction of a finger or hook into the axilla, when the shoulder is delayed, may lead to compression either by direct pressure on the plexus or indirectly by pressure of the clavicle when the shoulder and clavicle are pushed backward and upward. Forceps blades in very rare instances may reach the cervical region and cause damage to the brachial plexus. But much more often it is due to pressure or traction exerted on the shoulders in an attempt to accelerate the birth of the head by such methods as the Prague method (foot and shoulder traction), Smellie-Veit or Mauriceau method (jaw and shoulder traction), or the combined

¹ Read before the Annual Meeting of the New York Neurological Society, Tuesday evening, January 4, 1927.

‡ Died August 6, 1927.

methods (jaw and shoulder traction plus supra-pubic pressure). In extremely rare instances there has been compression of the brachial plexus by twisting of the umbilical cord round the neck.

As complications of obstetrical paralysis we may have fracture of the humerus or clavicle, dislocation of the shoulder, hematoma of sterno-cleido-mastoid and separation of epiphyses. These complications are no longer looked upon as the actual cause of the paralysis, but it may be that at times they are a contributory factor.

Brachial plexus obstetrical paralyses very often differ from all other nerve injuries not only etiologically and pathologically, but also in the end results obtainable. The nerve fibers and bundles are usually torn asunder or ripped apart, and not just simply crushed or cut in one place as obtained in most traumatic nerve lesions. When the plexus is overstretched the funiculi break at any point from the spinal cord origin of the roots to the most distal point of trauma so that avulsion of some funiculi from the cord and tearing apart of others in the nerve trunks may take place, thus the injury will be irregular, and examination of any cross section of the resulting scar will in most cases disclose incomplete interruption of continuity.

It is most difficult for the neurosurgeon to determine exactly at what level excision of the scar will give him intact funiculi, for they may be interrupted in a number of places, and still present no evidences of this at the site chosen for suturing and repair.

The lesions produced by compression, traction or laceration vary only in degree. If compression was of slight degree and for a relatively short time only, limited organic changes will occur in the myelin sheaths, whilst the axis cylinders proper remain unaltered. In such a case, restoration of function is usually rapid and complete. If the compression instead has been of a severe grade and over a comparatively long period of time, radical organic changes follow resulting in disintegration of the medulla and axis cylinders extending the entire length of the nerves distal to site of injury. If traction has been the cause of the paralysis the disturbances of function may be transient or permanent depending upon degree of trauma.

In those cases in which rupture of any portion of plexus has occurred the divided ends retract and scar tissue becomes interposed between the stumps, thus preventing regeneration. The degeneration which takes place in these cases affects both the distal and central portions, the distal portion undergoing degeneration throughout its entire length, including the intramuscular ramifications of the nerves and the end plates; whereas the changes in the central portion are practically limited to the severed end and consist of degeneration of

the nerve fibers, with formation of connective tissue and eventually of a neuroma. Insignificant changes in the nuclei and the rest of central segment also occur. Of much greater importance are the alterations in the muscles innervated by the degenerated nerves. Their primary fibers atrophy, and their transverse striations either become indistinct or disappear entirely. There is a wax-like degeneration with formation of granules, proliferation of nuclei of sarcolemma and internal perimysium, the muscles to the naked eye first appearing a faint red and finally yellow. They become markedly atrophied and in extreme cases in which there has been no restoration of nerve conduction they ultimately become nothing more than connective tissue masses.

In cases of avulsion of root from cord the affected side of the cord has been found smaller and flattened in its anterior portion at the level of the injury. The anterior horn area is involved in a sclerotic process. The gray matter is deformed on both sides, the cells are completely absent on the affected side, and on the opposite side only a few darkly stained elongated forms remain. The severity of the pathologic changes diminish gradually above and below the level of maximum injury. The meninges have been found dense, thick, tough and adherent on the affected side for one segment above and below avulsion, and the ventral roots found reduced to fibrous cords. But in spite of such positive findings Dr. T. Turner Thomas of Philadelphia, who had forty-four cases of obstetrical paralysis, concluded that "the reported nerve ruptures found at operation may be ascribed to a faulty interpretation of these cicatricial tissue changes," and that "the basic causal lesion is in the shoulder joint and not in the brachial plexus."

The brachial plexus is made up of the fifth, sixth, seventh, eighth cervical and first thoracic roots. Clinically paralyzes of this plexus are classified according to whether the fifth and sixth cervical roots alone are involved, whether the seventh, eighth cervical and first thoracic are damaged or whether the entire plexus has been injured.

Of these three the most common type of paralysis is the upper plexus, or upper arm type, usually called the Duchenne-Erb type and is due to injury of fifth and sixth cervical roots or the upper primary cord of plexus which originates from these roots. They arise highest from the cervical spine and are therefore stretched most when the head and shoulder are forced. Hence they are the most vulnerable roots of the brachial plexus. If the injury has been severe the paralysis will be noticed by even the most untrained, within the first few days. The affected arm hangs lifeless, its position being deter-

mined by gravitation; it cannot be abducted and it is held in a position of internal rotation. The forearm cannot be flexed and is pronated, the palm looking backward and outward. The paralysis is of the flaccid type and involves the deltoid, biceps, brachialis anticus and supinator longus most often. Exceptionally there is also paralysis of the clavicular head of the pectoralis major, supinator brevis, supra- and infra-spinatus, subscapularis and the teres major. There are never any pupillary symptoms. There is complete or partial reaction of degeneration, less often simple diminution of electrical excitability, especially to faradism. The supinator and biceps reflexes are absent or diminished whilst the triceps reflex remains unaltered.

Sensory disturbances are difficult to elicit in infants and such findings are therefore of not much value. When definitely present they are to be found in the area innervated by the circumflex and musculocutaneous nerves, *i.e.*, on the outer side of the upper arm over the middle portion of the deltoid—not quite extending to the acromion process—and on the external surface of the forearm. The only test of value is that for pain sense obtained with a pin point.

Atrophy supervenes after a few weeks, but the muscles are so small and so covered with fat in most infants that it is rarely noticed before the second year. When present, it is most conspicuous in the deltoid. In some of the more severe cases there occurs a shortening of the subscapularis, often associated with subluxation of the humerus.

The lower plexus or lower arm type of brachial plexus paralysis, usually known as the Klumke-Dejerine type, is caused by a lesion chiefly involving the seventh and eighth cervicals and first thoracic roots. It affects the triceps, flexors of wrist, pronators, the flexors and extensors of fingers and the small muscles of the hand. Atrophy comes on rapidly, and there is apt to be edema of the skin, cyanosis, and trophic changes in the nails. This type of paralysis is much rarer than the upper arm type and is often limited to the muscles of the thenar eminence, hypothenar eminence and interossei. If the lesion is close to the vertebral foramina of the eighth cervical and first thoracic roots the sympathetic fibers from the ciliospinal center in the lateral horn of the ventral gray matter will be involved, thus giving Horner's syndrome of narrowed palpebral fissure, ptosis, miosis and enophthalmos. The triceps and radial reflexes are absent or diminished. This form of paralysis is often the residual of the combined type, sensory symptoms are usually present, but as in the cases of Erb's palsy, they are difficult to elicit in an infant, the only fairly dependable test being the response to pin prick. The area.

affected is usually the cutaneous surface supplied by the ulnar, and the inner surface of the forearm and arm. On the hand the anesthesia sometimes extends into the area of the median nerve and occasionally its upper limit is the elbow.

The combined type of brachial plexus paralysis is one partaking of the nature of both the types previously described and is due to a lesion involving the entire plexus or most of it. It may be caused in the same manner as the other two types, but, according to Oppenheim, in most cases there will be found a dislocation of the shoulder under the coracoid process and into the axilla, thus causing the head of the humerus to press directly upon the nerves and possibly even lacerating them. In other cases unskilled, forcible attempts at reduction of the dislocation has undoubtedly produced the paralysis. In the combined type all the muscles of the hand, forearm, arm and shoulder may be involved, and the entire upper extremity is flail-like. In the early stages the skin is cyanosed. As a rule sweat is suppressed and there may be trophic disorders of finger nails and skin. Sensory symptoms are usually present, but vary a great deal in extent, although we know that at first there must necessarily be a loss of all forms of sensibility in entire upper extremity except for a triangular area on the inner side of the arm which may be vicariously supplied by the intercosto-humeral (second thoracic).

The prognosis of brachial plexus obstetrical paralysis is certainly much less favorable than that of ordinary peripheral nerve lesions. A very mild compression or traction paralysis may recover in a few days or weeks. If severe, it may take as long as two or three years. If there has been an actual laceration with severance of continuity, separation and displacement we can only expect recovery by resorting to neurosurgery.

Disregarding for the moment those cases requiring surgery, the prognosis depends to a certain extent upon the time that proper treatment was instituted, the electrical reactions, and the length of time the paralysis has existed without manifest improvement. A total reaction of degeneration shortly after onset means that the prognosis must be guarded, for complete recovery cannot be expected in every instance, and even in the most favorable cases restoration of function cannot be looked for in less than three or four months. A partial reaction of degeneration shortly after onset makes a fairly favorable prognosis justifiable, that is, there may be complete recovery within a few months at most. If electrical reactions are normal or electrical excitability is but slightly decreased ten to fifteen days after onset, one can safely prophesy complete functional restitution within six weeks.

Viewed only from the standpoint of clinical types as to favorability of prognosis, the upper arm type is the most favorable, then comes the lower arm type and finally the combined type.

Contractures and osteo-articular complications make prognosis more serious in all types of brachial plexus paralysis.

One of the grave dangers of a long existent obstetrical paralysis is that a habit palsy may replace the organic one when nerve conduction is finally restored. The child never having developed memory patterns or pictures for corresponding movements the function may thus remain in abeyance. Lack of attention or interest, indolence or feeble-mindedness may either help to produce this habit paralysis or otherwise perpetuate it.

The prevention of obstetrical paralysis is in a large measure feasible. The obstetrician or medical attendant should avoid as much as possible any manipulation which will overstretch the brachial plexus. He should especially avoid the bending of fetal head to one side while arm of opposite side is elevated and pulled backward. The use of finger or hook in axilla should be undertaken most cautiously, and above all any method for hastening delivery of after-coming head by traction on shoulders should be seriously considered and very gently carried out if determined upon. The records of the Sloane Hospital for women show that haste in breech extractions prompted by fear of fetal asphyxiation is unwarranted, because the birth injury and shock which it produces causes greater fetal mortality and morbidity than asphyxia.

The judicious treatment of brachial plexus obstetrical paralysis can logically be divided into that for the concomitant surgical lesions and that for the neurological conditions which cause paralysis.

Fracture of humerus, fracture of clavicle, dislocation of shoulder, separation of epiphyses need immediate surgical attention, the details of which would be out of place in this paper.

The paralysis proper is taken care of by immediately immobilizing the affected extremity in order to prevent additional hemorrhage and further separation of nerve segments. A splint made of aluminum, lined with soft felt, extending from hip to axilla, which will hold arm elevated in abduction at an angle slightly more than 90 degrees, will relax deltoid and bring shoulder nearer to neck, thus helping to approximate the torn nerve ends. At the same time the hand and forearm should be kept in full supination to overcome the tendency to pronation. Great care must be exercised that circulation is not interfered with and that pressure or traction on shoulder is avoided. The nutrition and functionability of the impaired

muscles must be maintained in a quasi-normal state so that they may be able to respond when nerve is again able to conduct stimuli. Complete recovery of nerve function will be of no avail if muscles have been permitted to degenerate to the point that fibrous tissue has replaced muscle spindles, or if postural treatment has been omitted or improperly executed to the extent that contractures have resulted from the unopposed action of healthy muscles. The postural treatment must be continued until function is restored, and at no time should the paralyzed muscles be over-stretched. The general nutrition of involved parts can be favorably influenced by: (1) Electrical stimulation; (2) massage; (3) heat; (4) hydrotherapy; (5) exercises.

Many prefer not to institute electrical treatment for at least two or three weeks after the injury. In giving electrical stimulation it is advisable to avoid strong currents in recent cases, as excessive excitation may aggravate the inflammatory reaction, and the exaggerated muscular contractions may further separate the lacerated nerve fibers. Of the various electrical modalities at our command, we have found the properly regulated rhythmical type, known as the surging sinusoidal current, most effective.

Massage of the deep, kneading type is indicated, but precaution should be exercised that no undue motion of extremity occur. Stroking of muscles is of much less value, but may be used especially early in the treatment.

Heat, by producing hyperemia, is useful and can be applied by means of various therapeutic lamps, baking apparatus, or even by hot water bags, hot sand bags, etc. The paralyzed extremity should be kept constantly warm by wrapping it loosely in wool.

Hydrotherapy in the form of warm moist dressings, warm sprays, and immersion of affected parts in warm water besides producing a hyperemia also causes a stimulation of any functionally active nerve fibers, and dilates blood vessels in a manner which is of some importance in improving nutrition. Occasionally, the use of heat and cold alternately is desirable to induce dilatation and contraction of peripheral vessels and so help restore vascular tone in impaired tissues. Exercises in the form of diligently performed passive movements, with no over-stretching of muscles, are useful in counteracting the tendency to fixation, and help increase nutrition at the same time.

All the forms of treatment mentioned should be so conducted as not to interfere with the postural treatment, or they should be so modified as to produce the least possible amount of interference.

If signs of regeneration have appeared within one year the

mechanical and physical treatments should be continued. But if one year after onset there are positive evidences of interrupted regeneration, or if no regeneration at all has taken place, one is justified in resorting to neurosurgery, but always keeping in mind that the sensory examination in infants is of little value as an indication of regeneration. One must rely mainly on motor and electrical changes carefully considered in conjunction with vasomotor and trophic alterations.

If surgery is decided upon the type of operation cannot be determined before operative exploration of the lesion, for the function of nerves may be interfered with or wholly abolished by compression of scar tissue, bony callus, or adhesions without there being any solution of continuity. This suspension of function is known as physiologic interruption in contradistinction to anatomic interruption in which there is actual severance of continuity.

If at operation it is found that there is only physiologic interruption, then neurolysis is performed. It consists in dissecting the affected nerve out of the scar tissue, bony tissue, or in removal of adhesions which are compressing it, and in providing a new bed for it, or surrounding it with some neutral, protective material which will prevent the reforming of the compressing tissue. The materials ordinarily used for this purpose are decalcified bone tubules, silk protective, magnesium, Cargile membrane, formalin hardened blood vessels, hardened gelatine tubules, human epidermis, fascia, fat, etc.

If there has been a solution of continuity, partial or complete, neurolysis must be combined with neurorrhaphy or nerve suture.

Nerve transplantation, nerve grafting and tubulization are to be used only when suturing is impossible because of large gap between segments. Results from these are usually disappointing.

If roots have been evulsed from cord one must think of the possibility of looping them up with intact ones as a last resort when nothing else of advantage can be done.

Very rarely one may see an old case with complete paralysis, yet showing normal electrical responses, and normal tendon reflexes. Such a case is one of habit paralysis and is best treated by fixing or immobilizing the unaffected extremity in order to compel the child to use the pseudoparalytic one.

Last, but not least, if there are contractures to be contended with they are best overcome by the method of gradual correction. It consists in the gradual and graded stretching of the affected muscles by properly designed splints whose angles allow of slow change; or the ordinary metallic splint may be forcibly bent so as to accom-

plish the same thing. If an inflexible splint is used we may attain the same end by the use of felt wedges, pads, etc. Patience, perseverance and persistence are the prime requisites for success. One must never lose sight of the fact that even scar tissue will yield to gradual stretching if tension be sustained; but that too rapid or forcible rupture of adhesions or fibrous tissues instead will be followed by more severe contractures.

Miss J. B., age fourteen years: On February 19, 1923, this patient applied for treatment at the Post Graduate Hospital with an incidental history of lack of strength in right upper extremity which dated back to infancy. The right hand had always been so weak that she had never been able to make any use of it. In fact, she had never been able to eat, write, play, or pick up objects with it. As far as the patient or any member of her family could recall, she had neither gotten worse nor better at any time.

The condition for which she sought relief at the hospital started as follows:

About four or five months prior to coming to the Post Graduate, the patient noticed what she described as a few small, whitish dots on the anterior surface of her right forearm. These dots kept getting larger and soon merged together, forming a small, whitish patch which slowly, but steadily, kept spreading in all directions. This whitish patch at this time was normal in consistency but gradually began to get thinner and take on a light, brownish hue. The patient noticed that the patch was anesthetic and she often amused her friends by sticking pins into it. Finally the skin of this involved area became as thin as tissue paper and almost the entire right forearm felt numb. She had no systemic symptoms, such as chills, fever, headache, lassitude, or disturbed sleep. Her people became alarmed at the rapid rate this new condition was developing, so they took her to the hospital for treatment.

Family History. Father died of some syphilitic complication ten years after marriage and seven months before the birth of patient. Mother has had a four-plus blood Wassermann. The oldest child also had a four-plus blood Wassermann. The other four children, of which the patient is the youngest, have always had a negative blood Wassermann. Mother's first pregnancy resulted in a stillbirth. There were no miscarriages. There is no history of tuberculosis, alcoholism, diabetes, mental or nervous disturbances in family or immediate relatives.

Past History. This patient was instrument born. Three days after birth the attending nurse noticed that there was something wrong with the child's right shoulder. A physician was called in and he said that the shoulder was dislocated. After alleged reduction, a plaster splint was used to immobilize the entire articulation. This splint was allowed to remain on for three months. During the first few months of life she had no eruption on any part of body, no discolored areas about the

nasolabial folds or around temporal region, no anal eczema or copper-colored intertrigo, no desquamation of soles of feet or palms of hands, no persistent coryza, and no anemia. She held head up at five months, began to speak at twelve months, began to walk at fourteen months, and read at six years. She has never had any convulsive seizure. She had measles, whooping cough, and an operation for empyema of the left chest during infancy. Otherwise she has never been seriously ill.

PHYSICAL FINDINGS

February 19th, 1923

1. Diminished right triceps reflex, absent right biceps reflex, absent right radial reflex.
2. Extreme weakness of all groups of muscles of entire right upper extremity, but no complete paralysis.
3. Fibrillation of infraspinatus and right deltoid muscles.
4. Circumference of forearms 15 cm. above tip of ulna showed right forearm 18 cm., left forearm 19.8 cms. Right forearm was 1.8 cm. smaller than the left.
5. Circumference of arm 15 cm. above olecranon showed right arm 18.2 cm., left arm 20.4 cm. Right arm was 2.2 cm. smaller than left.
6. From tip of acromion to tip of middle finger on right side was 66 cm., the left side 67.3 cm. The left upper extremity was therefore 1.3 cm. longer than the right.
7. There was an evident atrophy of right forearm, right arm and about the right shoulder.
8. She had practically no strength in right hand grasp. Dynamometer reading: left 30 Ko., right zero Ko.
9. Anesthesia and analgesia right thumb, index and middle fingers, and of radial half of anterior surface of right forearm.

PHYSICAL FINDINGS

November 9th, 1923

1. The reflexes have remained unchanged, that is, diminished right triceps reflex, absent right biceps reflex, absent right radial reflex.
2. There is still a slight weakness of right shoulder girdle group of muscles, extensors, flexors and rotators of right forearm and of flexors of right wrist.
3. Fibrillation of right deltoid and infraspinatus muscles unchanged.
4. Circumference of forearms 15 cm. above tip of ulna showed the right forearm 18.5 cm., the left forearm 19.8 cm., a difference of 1.3 cm.
5. Circumference of arm 15 cm. above olecranon, the right 19.5 cm., and the left 20.5 cm., difference of only 1 cm.
6. There was still a difference of 1.3 cm. in length of upper extremities.
7. Atrophy of right forearm, right arm and about right shoulder definitely less marked.
8. On November 9th, 1923, the hand grasp tested out with a dynamometer registered 30 Ko. with right and 35 Ko. with left.
9. Electrical reaction showed slightly decreased response to faradism and no inversion to galvanism of right infraspinatus, right deltoid, right biceps, right triceps, and right supinator longus.

PHYSICAL FINDINGS

February 19th, 1923

10. X-ray examination of cervical region of spine and entire right upper extremity shows no abnormality in position, detail or outline.

February 25th, 1924

Normal response to faradic and galvanic current of right infraspinatus, deltoid, biceps, triceps and supinator longus. Hand grasp, registered with dynamometer, left 40 Ko., right 45 Ko. Was able to perform skilled acts with right hand and clinically appeared entirely recovered.

PHYSICAL FINDINGS

November 9th, 1923

HISTORY NOTES

March 19, 1923: Area showing trophic changes is about 50 per cent larger than on February 19, 1923. On February 27, 1923, she became ill with pharyngeal diphtheria and was pronounced cured on March 15, 1923. No cultures were taken by the attending physician.

April 2, 1923: Area containing trophic changes slightly smaller and of better color and texture.

April 23, 1923: Blanched area still getting smaller and skin is becoming more normal in appearance and feel.

June 1, 1923: Continued improvement in appearance of atrophic patch; extraordinary return of strength in right upper extremity.

October 26, 1923: Blanched area on right forearm much smaller and considerably improved in color and texture. Has normal power in right hand and for first time in her life has been able to write with it.

THE EVOLUTION OF AN ENCEPHALITIC DYSTONIA INTO A HYPERTONIC-AKINETIC SYNDROME RE- SEMBLING WILSON'S PROGRESSIVE LENTICULAR DEGENERATION *

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In a previous paper Wechsler and one of us(1) described a boy (Case 4) who exhibited a remarkable dystonic syndrome following an acute attack of epidemic encephalitis. Such an unusual change has occurred in this patient that we feel justified in reporting him again, to contrast his status in 1923 with that now present.

The following description is taken from the paper cited(1) :

S. D., an American boy of Italian parentage, aged eleven, who had had pneumonia at two years of age and in whose family there is no history of any chronic illness, became ill April 28th, 1922, with headache, fever and abdominal pain. On the following day the left eye was "turned in" and the boy saw double. He became drowsy, the fever continued and his entire body "shook" so that he was unable to stand. At St. Vincent's Hospital, New York, the diagnosis of acute epidemic encephalitis was made. One month later the mother noted salivation and some difficulty in swallowing. Then seizures appeared in which his neck became hyperextended, his mouth opened and the eyeballs turned upward. There was no accompanying loss of consciousness. These attacks have persisted and are of variable occurrence and duration.

Examination of June, 1923, showed the following: In the recumbent position the boy's head is turned to the left and flexed slightly on the right shoulder. The right upper extremity is flexed at all joints, the palm of the hand faces outward, and the thumb is drawn backward and outward. There is adduction and inward rotation of the right arm, with almost complete pronation of the right hand. The left hand also shows this extension of the terminal phalanges of the thumb. The trunk is in a position of opisthotonus; there is contraction of the hamstrings; the abdomen shows spasm of the recti muscles and the right big toe is in constant dorsal extension. When sitting the boy shows a very decided plantar flexion and inward rotation of the left foot and toes (talipes equinovarus) and to a lesser extent of the right. There is a spasmodic tendency of the head to be drawn backward with the chin rotated to the left; the movement involves the sternocleidomastoid and posterior neck muscles.

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Seizures: The attack is as follows: First, there is an upward rotation of the eyes, then the lids half close, the forehead overwrinkles, the mouth gapes open, the upper lip is drawn upward, the lower jaw is drawn downward by the spasm of the depressor muscles of the mandible and the head is rotated backward until the occiput almost touches the interscapular region. The right hand becomes everted and the right arm rotated inwardly. Conjoint rotation of the eyes to the right and fibrillary twitchings of the tongue are noted. This position is interrupted by the patient drawing his head forward voluntarily with the aid of his hands. He brings his head forward repeatedly after it has been thrust back, and with his fingers he pulls down his upper lip and closes his gaping mouth by pushing up the mandible. This movement is frequently repeated. The face is drawn up in a spasmodic movement, not as often as the lips, head and other parts. While these "larger" head movements, lasting five or ten seconds, are repeated at irregular intervals, there are other interrupted small excursions consisting merely of a partial thrusting back of the head and partial opening of the mouth. With this, too, the patient voluntarily brings forward the retracted head and closes the gaping mouth. (These postures are illustrated; see page 701 of the previous article (1).)

Numerous observations disclose the same stereotyped movement even when the boy does not know that he is being watched. For instance, while playing ball in the garden of the hospital with other children, the same twisting distortion was noted. There are times when the movements are quite minimal, contrasting strikingly with the days when the movements are marked.

His gait is quite unaffected. He can jump and run up and down stairs with considerable agility. Between the seizures his upper extremities swing *normally in walking*; during them the upper extremities, especially the right, lose their associated swing.

Cranial Nerves: The left pupil is larger than the right; both are irregular and react very sluggishly to light and in accommodation. The fundi and fields of vision are normal. The left palpebral aperture is greater than the right. There is a very fine rapid lateral nystagmus, and a marked vertical nystagmus on upward gaze and less on downward gaze. Convergence is very poor. While the motor and sensory trigeminals are normal, the lateral movements of the lower jaw are poorly performed. The jaw jerks are very lively. The hearing is normal and the labyrinthine tests give normal reactions. The palatal movements are poorly performed but there is a good palatal reflex. The tongue deviates to the left and shows fine fibrillations and coarse tremors, especially on the right. The speech is somewhat nasal and monotonous. He eats and swallows normally. There is marked hypertrophy of the sternocleidomastoids, especially on the right. Resistance of the posterior neck muscles to passive movement and increased muscular development of

the shoulder girdles and neck are noted. Between seizures there is a slight hypertonus to passive movements on the right. During an attack this hypertonus increases.

Reflexes: The deep reflexes of the upper extremity are all equal and lively. The abdominals and cremasterics are very lively. The knee and Achilles tendon jerks are lively and equal; there is no ankle clonus. There is a bilateral Babinski, more pronounced on the right than on the left.

The finger to nose test is well performed with the eyes open and closed. There is apparent adiadochokinesis on both sides, probably due to slowness rather than clumsiness of movement. A rapid, fine tremor of the extended upper extremity is noted. At times respiration is deep and labored; occasionally the accessory muscles are involved. The sensory examination is negative, as are all serologic and laboratory findings. No Magnus or DeKleijn neck reflexes can be elicited *between seizures*.

The signs noted are referable to diffuse multiple lesions of the entire brain stem, from the basal ganglia down to the lower medulla. The occurrence of upward conjugate movements of the eyes, and closure of the lids at the beginning of the seizure, point to the hypothalamic region. *Of particular interest is the fact that we are dealing with a segmental dystonia, which has developed as a sequel to an undoubted attack of epidemic encephalitis.*

The patient's status remained unchanged until 1925 when the characteristic *hyperkinetic and dystonic symptom gradually disappeared*. As will be seen, the clinical picture has changed greatly in the three years interval.

Examination of October, 1926, showed the following: There are no involuntary movements.

Posture: The boy's posture is that of Parkinsonism (Fig. 1). He stands on a broad base with the knees and hips slightly flexed, the trunk inclined forward and the neck continuing the forward inclination of the trunk. The right knee is slightly more flexed than the left. The head is somewhat extended on the neck. The upper extremities are held close to the body; both arms are retracted at the shoulder; the forearms are flexed at the elbow; the right hand touches the thigh and the fingers are flexed at the metacarpophalangeal joints and extended at the interphalangeal joints. The thumb is opposed to the index finger. The entire hand is cupped in the typical paralysis agitans manner. The palm is directed backward and inward. The same position is exhibited in the left hand, except that the palm is directed more inwardly and the interphalangeal joints are slightly flexed. The left thumb is hyperextended at both interphalangeal joints. The cup of the left hand is shallower. The approximation of the fingers in the right hand lead to an overlapping of the little by the ring finger on the palmar aspect of the right hand. In the left hand such approximation is less evident and there is a distinct cleft between the middle and ring fingers.

The body inclines somewhat to the left making a slight curvature with the convexity to the right in the lumbar region and slightly to the left in the cervical region. As a consequence, the body tilts to the left and the left arm is not as close to the body as the right but is somewhat more posteriorly retracted. There is a torsion of the trunk on the vertical axis so as to make the right shoulder further advanced than



FIG. 1. Compare with figures on page 701, *Arch. Neurol. & Psych.*, Vol. 11 (June), 1924.

the left. The left foot is somewhat rotated inwardly. In getting up from the sitting position he ventroflexes his trunk like a jackknife, then straightens up. One notes: (1) a marked flexion of the trunk on the thighs, (2) a retraction of the right thigh and flexion of the right knee, which brings the right foot under the chair. The flexed body swings the center of gravity forward. The retracted right limb then serves as an initial column of support for the upstanding body. Both in sitting and in walking the body tends to slump forward and to the left. His

walk is typically Parkinsonian, with a strong propulsion, largely due to the forward inclination of his body. In walking there is a marked inward rotation of the left foot, with some equinus, producing a scraping of the anterior, outer and dorsal part of this foot. The upper extremities have practically the same posture as detailed before under station; *they do not swing while he walks*. He walks backward better than forwards because he does not have to combat his propulsive tendency. There are very small deviations to either side in walking. Lateral gait shows nothing remarkable. In the recumbent position the posture corresponding to the erect position is observed.

A condition of hypertonus is present in the upper extremities with marked cogwheel phenomena on both sides at various joints. The hyperextended fingers are hypotonic. In the lower extremities there is much less hypertonus and at times it is difficult to demonstrate at all. The retracted jaw is held downward quite rigidly and the extended head likewise shows hypertonicity of the posterior neck muscles.

Cranial nerves: The sense of smell is normal. The discs and fields of vision are normal; the pupils are irregular, the left being larger than the right; the left is somewhat irregular and reacts very slightly to light; the right pupil reacts better. He cannot converge. When told to look at the tip of his nose the patient's eyes make a right lateral excursion. Upward gaze produces a slight turning outward of the right eye. There is a weakness of downward gaze which is not as well executed as the upward gaze. The other eye movements are normal. There is a bilateral nystagmoid twitch. The face is of the fixed Parkinsonian type. The lower jaw is markedly retracted showing the tongue in a widely opened mouth. He is constantly drooling saliva. The face lights up in a smile on appropriate stimulation, with the accompaniment of an articulatory grunt. This emotional reaction is too readily elicited. He winks, frequently making fine up and down movements (jactitations) of the half-closed eyelids. He shows a bilateral weakness of both sides of the face and is unable to wrinkle his forehead, close his eyes or show his teeth, nor can he close his gaping jaws. A very slight excursion of the mandible upward is present. When the jaw is passively closed against marked resistance (which can only be done to about three-fourths of an inch of full closure) he can hold it so for a few seconds. Gradually spasm of the retractors draws it downward. In yawning the jaw is opened still wider. The sensory examination of the face and both cornea is normal. The hearing is also normal. The excursion of the palate is fairly well performed on both sides. The red dry tongue lies on the bottom of the mouth and shows a gross tremor. He is able to project it a little, but cannot move it from side to side. The free margin of the tongue is thickened and almost squarish. The lower lip and palate are constantly bathed with drooling saliva. He swallows with considerable difficulty. The phalangeal reflexes are normal. He is unable to utter words and makes inarticulate grunts, except when his

jaw is forcibly closed under which circumstance he can speak in a faint monotonous voice. In laughing the accompanying articulatory sounds are frequently prolonged ("forced laughter").

An active rotation of the head to either side and backward is restricted by spasm. Ventroflexion is less restricted. The passive movements of the head and neck in any direction are opposed by spasm of the neck muscles. The sternocleidomastoid and other neck muscles are difficult to bring into action because of the spasm.

Examination of the upper extremities shows strongly developed rigidity which now limits the movements of the upper extremities. The right grip is stronger than the left. Even though the movements are initiated and carried out with difficulty, no real paralysis is noted. The finer movements of the fingers are impossible. A diffuse rapid fine tremor accompanies the movements of the extremities. A bilateral *adiadochokinesis* is present, due to the rigidity. The reflexes of the upper extremities show both triceps jerks to be absent and the biceps are both present. No Hoffman reflex could be elicited.

In the lower extremities all movements are slowly performed and accompanied by the same diffuse tremulousness observed in the upper extremities. On the left there is a tendency to hold the foot in *equinovarus* and rotate it inwardly. It cannot be *dorsiflexed*. He can make rapid tapping movements of the right foot well but does so poorly with the left foot. The reflexes of the lower extremities show both knee and ankle jerks to be equal and active. There is a bilateral Babinski toe reflex; the cremasteric and abdominal reflexes are equal and active.

While the patient is almost statuesque in his postural fixation, he can catch a ball or hop on a low table with surprising ease. Evidently most of his motor difficulty is due to extrapyramidal involvement.

There are no disorders of sensation.

The patient is alert, understands everything well and replies (by signals) accurately. All commands are correctly executed. He is somewhat euphoric but otherwise his mental status is normal.

DISCUSSION

The reason for putting this case on record is the unusual change which has taken place during the three years elapsing between the first report and this subsequent one (1923-1926).

The patient has progressed from a dystonic and hyperkinetic syndrome, with but little evidence of hypertonus and insignificant striatal-bulbar symptoms, to one in which hypertonus, restriction or loss of movement, dysarthria and dysphagia are dominant. *This later syndrome bears considerable resemblance to Wilson's progressive lenticular degeneration.* (In this connection it may be of interest to point out that before the anatomical substratum of Parkinsonism was known, S. A. K. Wilson, in 1911-1912, noted the relationship of

it to his progressive lenticular degeneration.(3)) Akinesis, hypertonus, tremor on movement, dysphagia, dysarthria, and "forced laughter" are common to both. However, in this case we have a definite history of acute epidemic encephalitis, a precedent dystonic and hyperkinetic, evolving into the present akinetic phase, some signs of pyramidal tract involvement, no familial incidence, and, excepting the mild euphoria, no psychic disturbances. Undoubtedly a chronic encephalitis is the basis of the symptomatology.

Such a change in clinical picture has been noted before. Thomalla(2) records a rapidly progressive case of nonencephalitic torsionspasm, in which rigidity replaced the dystonic contortions.

In a previous paper,(4) it was pointed out that ordinary cases of dystonia musculorum deformans could be divided into those showing involuntary movements, *the myokinetic form* (comprising the majority) and another, *the myostatic* (or akinetic form), which exhibits the postural pattern solely. Moreover, it was shown that the myokinetic type could lose its involuntary movements and become akinetic.

In our patient, with a segmental incomplete encephalitic dystonia, such a transition occurred, brought about, very likely, by the hypertonus which has developed to such a degree as to prevent involuntary movement.

The literature on chronic epidemic encephalitis is full of reports of dystonic and Parkinsonian syndromes. Many of the latter have the tremor, dysarthria, and dysphagia which are reminiscent of Wilson's progressive lenticular degeneration. However, we have been unable to find a similar report describing the transition from a *dystonic and hyperkinetic* state to one of rigidity and akinesis, in the major articles and monographs on epidemic encephalitis in the French, German, and English literatures.

Considering the very close similarity shown by the neuropathology of cases of dystonia musculorum deformans, progressive lenticular degeneration and pseudosclerosis (Westphal), one should not be surprised by the matamorphosis herein described. Jakob(5) even states that "chronic progressive torsionspasm can be a clinical form of 'Wilson-pseudosclerosis.'" Apparently the change in signs depends upon increase in the intensity and distribution of the lesions. For C. and O. Vogt and Jakob call attention to the replacement of involuntary movements by hypertonus and akinesis in those cases in which the pathological process has progressed from a *partial striatal lesion to a more complete striopallidal degeneration*.

We do not wish to enter any further into a discussion of the complicated question of basal ganglion pathology at this time, except to suggest the probability that a progressive chronic encephalitic process has attacked the lenticular nuclei in our case, resulting in a clinical syndrome resembling Wilson's progressive lenticular degeneration.

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LESIONS OF THE EPICONUS *

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Since the description by Minor (1) in 1901 of a symptom complex located in the epiconus region of the spinal cord, the occurrence of such a syndrome has been widely recognized. The localization of such a syndrome in an area which Minor termed the epiconus has also been definitely accepted. There have been very few good reports of lesions in this area, however, and the original description of Minor, (1) while a purely clinical report, still remains the most complete in the literature. Sporadic cases have been reported from time to time, but since 1901, when the syndrome was first described, no review of the subject has been attempted. For this reason it is desirable to present a few more cases of epiconus lesions, and to attempt to summarize our knowledge of this region of the spinal cord together with its syndrome.

ILLUSTRATIVE CASES

Case 1. H. R. 69932. Tabes dorsalis with bilateral foot drop. Lesion in the epiconus.

History: The patient, from the clinic of Dr. T. H. Weisenburg at the Infirmary for Nervous Diseases, first came to the hospital in 1914. He says he was well until February, 1914, when he found that his right leg stumbled. This was sudden in onset, and occurred one day while he was walking in the street. Shortly afterwards his left leg became weak, and he found he stumbled with both legs. In May, 1914, he began having pains in his legs, beginning in the hips and radiating down both legs into the ankles. These were sharp, shooting and lancinating in character. They did not always begin in the hips, but occasionally began in the knees or ankles. At times they were sharply localized in the hip, knee, or ankle joints. At the same time he noticed involuntary dribbling of urine, and at times difficulty in starting the stream. He complained also of a tight feeling in his abdomen. No further history is obtainable because of the poor mentality of the patient. There have been no additional symptoms, however, since the onset of his trouble. The past history is negative except for the fact that the patient had a

* From the Infirmary for Nervous Diseases, Service of Dr. T. H. Weisenburg, and the University Hospital, Service of Dr. W. G. Spiller.

chancere in 1902 which was treated by cauterization. No further treatment was received until he came to hospital.

Physical examination: Reveals a poorly developed and nourished man of forty-seven. The *head, ears and nose* are negative. *Teeth* are in very poor condition. Many are carious. *Tonsils* are small but not diseased. *Thyroid* is not enlarged. *Heart* is not enlarged. The heart sounds are of good quality. There are no thrills or murmurs. *Lungs* are clear throughout. *Abdomen* is negative for masses or tenderness. *Blood pressure*, systolic 148, diastolic 82.

Neurological examination: The positive neurological findings were: irregular and unequal pupils which were practically stiff to light, bilateral deafness, tremulous voice, and fine tremors of the lips. The outstanding features were found in the lower extremities. There was a bilateral foot drop, more marked on the right side than on the left. The muscles of the entire lower extremities were wasted. The glutei, hamstrings, and calf muscles were all definitely atrophied, but no fibrillary twitchings could be seen. Dorsiflexion of the feet was weak, especially on the right side where it was practically impossible. Eversion of the foot was also absent in the right, and very weak on the left. Extension of the legs on the thighs was very weak, and flexion also seemed less powerful than it should be. The toes could be flexed, but the movement was weak. Extension of the toes of the right foot was markedly weak. On the left it was weak, but less so than on the right. The gait was ataxic with the feet lifted high, and with bilateral foot drop. There was a definite Romberg sign. The lower extremities showed a marked dysmetria and ataxia on the heel to knee test, the heel passing far beyond the knee with marked incoördination. The upper extremities also showed definite incoördination and dysmetria on the finger to nose and finger to finger tests. This was so especially of the left arm. Position sense was impaired in both feet, and vibration was decreased but not lost in both lower extremities to the hips. No definite disturbance of touch or pain could be elicited in the lower extremities. The biceps reflexes were decreased bilaterally. The patellar and achilles reflexes were bilaterally absent. Abdominal and cremasteric reflexes.

Laboratory: The blood Wassermann in 1914 was four plus. Spinal fluid examination in 1914 showed a negative Wassermann, but no other findings were recorded. A spinal fluid examination in November, 1926, showed one cell, a negative globulin content, a negative Wassermann in all dilutions, and a colloidal gold of 0000000000. The red cell count was 4,820,000 and the hemoglobin content 90 per cent. Urinalysis was negative. Electrical examination by Dr. Boyer showed no reaction of degeneration in any of the muscles of the thigh, leg or foot of either side. There were good galvanic and faradic responses.

Discussion: There can be no question that the patient has tabes dorsalis. The history of disturbance of gait, the lancinating pains,

the sphincter disturbance, the irregular and poorly reacting pupils, and dysmetria and ataxia in the extremities, the gait and station, the impairment of position sense and vibration, and the positive serology at the onset make a diagnosis of tabes certain. There is something in addition, however. Bilateral foot drop in tabes is not a common finding. Nonne(2) makes no mention of it, though it probably has been reported. A syphilitic polyneuritis might produce such a picture, but as Spiller has pointed out, syphilitic polyneuritis is very rare. Nonne says it occurs, and Remak believes that when found it is due to a neuritis of the dorsal root from a pachy-leptomeningitis in the area involved. The involvement of the extensors of the leg, the peronei, and anterior tibial groups of muscles in this case, however, with absent ankle jerks and no saddle anesthesia or sphincter involvement, point to a lesion within the cord at the fifth lumbar to the second sacral segments. A localized meningitis at this area involving the anterior roots could produce this picture, or a thrombosis of the anterior spinal artery could account for all the symptoms. The sudden onset with weakness of the lower extremities points more to a thrombosis of the anterior spinal artery in the region of the epiconus. The absent knee jerks and the other evidences of tabes are not part of the epiconus syndrome, but it seems very likely that in this case we have a typical case of tabes which has involved the epiconus territory, causing bilateral foot drop and absent ankle jerks without sphincteric involvement or sacral anesthesia.

Case 2. R. C. Bilateral Peroneal Nerve Palsy Epiconus Syndrome.

History: Patient entered the University Hospital in December, 1926, on the service of Dr. W. G. Spiller, complaining of foot drop. She had been healthy until four years ago when she developed rheumatic pain in her right knee. This pain was noted only on sitting up and disappeared when she stood up or lay down. It was increased by movement of the hip. In about three weeks it extended up the lateral aspect of the thigh to the iliac crest and then backward to the right sacroiliac region. In two to three months the patient noted she would frequently turn her right ankle, and at the same time she developed rheumatic-like pain in the lateral aspect of the leg and ankle, and finally in the dorsal part of the foot. About three years ago she discovered she could not raise her right foot. About two years ago she fell and sprained her left ankle. It recovered slowly and when she was able to get about she noticed the left ankle moved and slipped. She has not been able to raise her left foot since. For the past two years she has had very little pain in her right thigh or leg, and this only after she has been on her right foot for some time. Lately there has been pain in the lateral aspect of her

left leg and foot. These pains are described as "pins and needles." Scratching the lateral aspect of her left leg causes "pins and needles" feelings in her left foot.

Physical examination by Dr. Overholt showed the skin, head, eyes, ears, nose and throat to be negative. The heart sounds were distinct, but there were no extraneous sounds. The lungs and abdomen were negative. The spine showed no abnormalities.

Neurological examination was entirely negative save for the lower extremities. The cranial nerves were negative, and the upper extremities were quite normal.

Laboratory: Urinalysis showed a faint trace to a trace of albumen on several occasions, with an occasional hyaline cast. The erythrocytes numbered 4,840,000. The leucocytes were 8,000, and there was a hemoglobin content of 90 per cent. The *blood Wassermann* on first examination was negative in all antigens save the Kolmer which gave a doubtful positive. On another occasion it was entirely negative in all antigens. *X-ray* of the lumbar spine and iliac regions was negative. *Lumbar puncture* showed an initial pressure of 8 mm. of mercury. The pressure rose to 20 on coughing and 23 on compression of the jugular veins. There was a quick rise and fall. The spinal fluid contained 9 cells. The spinal fluid Wassermann was negative, and the colloidal gold was also negative.

Discussion: On December 16, 1926, Dr. Spiller made the following notes: "There is diminution of pain sensation on the outer side of the right foot (for pain, not touch) in the first sacral and fifth lumbar segments. There is no diminution of pain sensation on the inner dorsum and none on the sole of the right foot. She can flex the right toes and can adduct and abduct the right foot. The flexion of the right leg on the thigh is distinctly diminished. She can flex the left toes feebly. She can neither adduct nor abduct the left foot. The flexion of the left leg on the thigh is distinctly diminished. There is therefore a symptom complex which is suggestive of spinal segment involvement at the level of the first sacral and fifth lumbar segments. With impairment of pain sensation on the right side in the distribution of the first sacral and fifth lumbar segments the symptoms are indicative of a lesion in the epiconus and began with pain in the distribution of the right sciatic nerve. The reaction of degeneration of each leg is greater than is likely to occur from pressure palsy. Her blood Wassermann in the first test was suspicious. Her pupils are equal and respond to light."

Another note by Dr. Spiller a few days later stated: "While the weakness in the flexion of each leg on the thigh is not intense, the flexion is less powerful than in the extension of the legs on the

thighs in this woman, so that the lesion involves partly the fourth lumbar segment. As her patellar reflexes are very prompt, even exaggerated, especially on the left, the lesion cannot involve the whole of the fourth lumbar segment and certainly cannot extend into the lumbar segments above the fourth. I do not obtain any achilles reflex on either side. The paresthesias seem to be confined to the outer side of each leg and to the dorsum of the foot. The theory of pressure palsy from position of the knees is plausible, but this explanation for the bilateral peroneal palsy does not explain the involvement of the left posterior tibial nerve as adduction of the foot is largely by means of the tibialis anticus muscles, and the adduction of the left foot in this patient is abolished. These muscles are supplied by the posterior tibial nerve. The escape of the functions of the bowels and bladder is diagnostic of the epiconus complex."

Case 3. J. S. 22086. Unilateral epiconus lesion. Peroneal palsy on right. Wasting of entire right lower limb.

History: Patient entered the Infirmary for Nervous Diseases on the service of Dr. T. H. Weisenburg in July, 1923. He was well until June, 1922, about thirteen months before entrance, when he began to have prickling sensations like needles, crawling sensations and sensations of hot and cold accompanied with pain that radiated down the right thigh and leg. These pains were more persistent and severe in the outer aspect of the leg and over the dorsum of the foot. The pains and paresthesias became worse until entrance to hospital. They were aggravated by work which involved the lifting of objects and by dampness. About six months before entrance the patient began to develop weakness in his right foot which gradually increased until he could no longer lift the foot. Two months before entrance, he noticed twitchings and quiverings in the muscles of his right thigh. He has never had sphincter or sexual disturbances. About four months before entrance, the patient began to notice paresthesias in the same area in his left leg, but these have never become as severe as in the right leg. The past history reveals the fact that the patient had a urethral discharge in 1920, but he denies a chancre. He had had a discharging ear for eight years when first examined, but no other serious illnesses. He admitted the use of alcohol, but denied using it to excess.

Examination: Upon entrance in 1923 showed a well developed and middle-aged Slav. The eyes were negative. From the right ear there came a serious foul-smelling discharge which was apparently chronic. The ear drum was perforated. *Teeth* were in fair condition. *Throat* was negative. *Lungs* clear and resonant throughout. *Heart* sounds were of good quality. No murmurs. Blood pressure measured systolic 130, diastolic 90. *Abdomen* was negative through. *Spine* showed no tenderness but a definite scoliosis in the lumbar region.

Neurological examination: Upon entrance in 1923 examination of the cranial nerves was negative. The pupils were equal, regular, and reacted well to light and accommodation. The upper extremities showed no abnormalities. There was no loss of muscle power, no sensory disturbance and no disturbance in coördination. The lower extremities showed a definite decrease in size of the right thigh and leg. Actual measurements showed the following:

	Right	Left
Upper third thigh	20.5 cm.	20 7/8 cm.
Lower third thigh	15 1/8 cm.	16 3/8 cm.
Upper third leg	12 5/8 cm.	13 6/8 cm.
Ankle	9 6/8 cm.	11 6/8 cm.

The right leg was therefore about 2 cm. smaller than the left in corresponding areas, and was noticeably smaller to the eye. Numerous fine fibrillary tremors were present in the outer aspect of the right thigh and in the leg. Numerous fibrillary tremors could be seen in the outer portion of the left thigh. The patient was unable to flex the foot or to move the toes. There was definite weakness of the peroneal and posterior tibial muscles. The achilles reflex in 1923 was recorded as bilaterally absent, while the knee jerks were active and equal. The biceps and triceps reflexes were active and equal. The abdominal reflexes were present. Sensory examination showed a marked diminution and almost loss of tactile, pain, and temperature sensations over the outer aspect of the right leg, the dorsum of the foot, and the sole of the right foot. The left foot showed a diminution of sensation over its dorsal aspect.

Laboratory: *Urinalysis* was entirely negative. *Erythrocytes* 4,650,000. *Leucocytes* 8,400. *Hemoglobin* 85. *Blood chemistry* glucose 142.8 mg. per 100 c.c., N.P.N. 222 mg., urea 10.3 mg. *Blood Wassermann* negative in all antigens. *Spinal fluid* cells 3. Globulin plus 4. *X-ray* of the spine showed a dorsolumbar scoliosis with a compound curve. There was suggestion of osteoarthritis, especially of the lower dorsal vertebrae. *X-ray* of the chest showed increased density at both apices which was very suggestive of TB. *X-ray* of the right mastoid showed a loss of cell outline and an appearance strongly suggesting a sclerosis. The sinuses were negative.

Course: The patient has been under observation since 1923. The degree of his paralysis remains the same. He still has a marked foot drop. The pains in his leg reappear from time to time during cold and damp weather particularly, but are not as bad as upon entrance to hospital. The sensory findings are doubtfully present. Disturbances on the outer aspect of the right leg can be demonstrated but they are not as definite as in 1923. The patient was treated with neosalvarsan for some time and seemed to show some improvement for a time, but on the whole showed no great change in his condition. Massage and electricity have given him the greatest relief. Recent electrical examina-

tions show very little response in the anterior tibial and peroneal group with no reaction of degeneration. Muscle power in the right lower extremity has remained unimproved and is still diminished. Dorsiflexion and abduction of the foot is impossible. The toes of the right foot cannot be extended. Adduction of the right foot is also weak. Flexion of the right leg on the thigh is possible, but is definitely weaker than on the left. Extension of the leg on the thigh is powerful. There is definite atrophy of the right buttocks, the posterior aspect of the right thigh and the right leg. In these areas fibrillary tremors, coarse and fine, are very numerous. During observation in the clinic the achilles jerks seemed to vary considerably; at times the right was unobtainable, and at times decreased. The left achilles jerk has at times appeared normally active and at others decreased. The patient was operated on for his discharging ear, and the discharge relieved, but without benefit to his paralysis.

Discussion: The outstanding features of this case are: atrophy of the right lower extremity with fibrillary twitchings, foot drop on the right side, weakness of the flexors of the thigh, extensors of the ankle and toes, a diminished to absent ankle jerk, and a sensory impairment in the distribution of the superficial peroneal distribution. The most striking thing in this case as in all other cases of epiconus lesion is the foot drop. In this instance it is unilateral and in this sense is extremely exceptional. The lesion in epiconus syndrome is usually bilateral and is accompanied by bilateral toe drop. Unilateral foot drop is in the great majority of cases due to a peroneal lesion of the superficial peroneal nerve. In this case, however, the onset of symptoms with pain in the sciatic nerve distribution, the atrophy in the entire right lower extremity involving in part the glutei and more markedly the flexors of the thigh and the intense fibrillary twitchings in the entire right lower limb, the decrease in the ankle jerks and presence of the knee jerks, with preservation of sexual and sphincter functions, point to a lesion in the gray matter of the epiconus, unilateral in distribution and involving the fifth lumbar and first sacral segments. The involvement of the glutei on the right side would point to some involvement of the fourth lumbar segment, but this can only be partial because the knee reflexes are still intact. The etiology of the condition is obscure. Despite the negative serology it was thought the patient had a syphilitic meningo-myelitis confined to the fifth lumbar and first sacral segments chiefly. The presence of a history of urethral discharge only two years before the onset of the symptoms made this seem more plausible. The patient did not improve, however, under treatment with specific

therapy. For eight years before reporting to hospital he had a discharging ear. A radical mastoid operation was done while in the hospital and the ear discharge entirely relieved with only very temporary relief of his pain and no increase in the power of his right leg. It is difficult to determine whether the process was specific or toxic, but it is unquestionable that it is confined chiefly to one side of the spinal cord in the region of the epiconus, involving chiefly the fifth lumbar and first sacral segments, and to a lesser degree the fourth lumbar segment.

Comment: The epiconus region as described by Minor(1) includes the fifth lumbar to the second sacral segments, inclusive. Anatomically, there are no characteristics which differentiate it from a diagnostic standpoint. Immediately below it lies the conus, the clinical syndrome of which was first described by Raymond, and Minor chose the term epiconus to refer to that region of the spinal cord lying immediately above the conus medullaris. That the epiconus differs in anatomical structure from the conus has been shown by Müller, who demonstrated that beginning with the third sacral segment there is a disappearance of the large motor cells of the anterior horns, the appearance of new cells in the anterior and posterior horns, the lack of a posterior commissure, and the disappearance of the corticospinal tract. Thus, the epiconus and the conus differ materially in an anatomical way, and cannot be said to be part of the same structure.

The clinical syndrome of the epiconus as described by Minor in 1901 consisted of the following characteristics: involvement of the sacral plexus, the nervus peroneus being most affected; absence or diminution of the ankle jerks, integrity of the sphincters, and integrity of the patellar reflexes. Minor based his observations and conclusions on six cases of injury to the spinal cord, all with the above signs and with bilateral peroneal paralysis. He attributed the condition to a central involvement rather than to a peripheral lesion because of the anatomical distribution of the signs and symptoms. In 1904 Weisenburg(3) reported a case of epiconus syndrome in a man who had been injured in the back and who upon examination by Weisenburg showed wasting of the buttocks and both lower extremities, weakness in flexion, and adduction of the thighs, weakness in flexion and extension of the toes, bilateral foot drop, absent ankle jerk and intact sphincters. The case corresponded well with the syndrome as described by Minor, but had more than is usual in the typical epiconus syndrome because it had, in addition to the above, bilateral ankle clonus and Babinski. The lesion unquestionably

involved the region of the epiconus, but affected not only the gray matter of the cord but the lateral columns as well.

In 1906 Minor(4) described three further cases of epiconus syndrome, but added little to what he had said before. Two of his cases were due to poliomyelitis, and the third was due to trauma. Spiller(5) in 1908 reported the first case of epiconus syndrome with necropsy. The case was one of extreme interest in that it was difficult to differentiate between an epiconus syndrome and a syphilitic multiple neuritis. Spiller's patient showed absent ankle jerks, intact sphincters, knee jerks which were slightly prompter than normal, and eventually a bilateral peroneal palsy. Spiller says: "The remarkable features of this case were the bilateral peroneal palsy affecting the left side before the right with the escape of the tibialis anticus muscles, weakness of the flexors of the legs and extensors of the foot, disturbance of objective sensation in the distribution of the first and second sacral roots, a peroneal supply, loss of achilles reflexes, later loss of plantar reflexes, and preservation of patellar reflexes and the function of the bladder and rectum, in a man clearly affected with syphilis of the nervous system, as shown by the history and cerebral manifestations, and pathological findings." Necropsy in this case showed intense degeneration in the anterior horn cells of the lowest lumbar and sacral regions. Spiller reported two other cases without necropsy, one of which was due to a poliomyelitis after pneumonia. Other cases have been reported, but not in detail nor in great number. Tutyshkin(6) reported a case of epiconus syndrome in a case of spina bifida occulta. Ornstein(7) reported a case of an infiltrating condition involving not only the epiconus but also several segments above it. Recently Levison,(8) and still more recently Parker,(9) have described cases of the epiconus syndrome.

No revisions of the syndrome as originally described by Minor have been made. The syndrome is characterized by positive symptoms—involvement of the sacral plexus and absent ankle jerks, and by negative symptoms—integrity of the sphincters and of the patellar reflexes. The negative symptoms are of as great value as the positive, since involvement either of the patellar reflex arc or of the sphincter would remove the case from the purely epiconus region. Minor in his original paper remarks that the outstanding sign is the paralysis in the sacral plexus distribution. He says that the glutei and flexors of the thigh are either normal or only paretic, while the peroneal nerve distribution suffers most in the motor, sensory, and electrical spheres. In other words, the nervus peroneus is most involved. An analysis of the cases reported, however, demonstrates

the fact that while the outstanding feature is a bilateral peroneal palsy, that the glutei and hamstrings are involved in all cases, and the extensors of the toes in practically all cases. Spiller remarks that when the lesion extends above the first and second sacral segments "into the fifth lumbar segment, the flexors on the back of the thighs and the gluteal muscles are weak, because of the implication of the fifth lumbar segment." Eventually, it seems to me there must be at least relative weakness of the glutei and hamstring muscles, as well as the muscles supplied by the deep peroneal nerve, since part of their supply is from the first and second sacral segments, which are probably most involved in the epiconus syndrome. Our first case showed definite atrophy of the glutei, posterior thigh muscles, and the muscles of the calves. He had bilateral toe drop. Minor was correct in stating that the peroneal distribution of the sacral plexus was most involved, but he did not sufficiently stress the occurrence of wasting in the extensors of the thighs and legs. These, in our opinion, are always involved in part at least. Seletzky(10) has stressed a similar point in a recent article in the *Festschrift* to Professor Rossolimo. He believes that there are two types of epiconus syndromes, one type involving chiefly the gluteus maximus, the peroneal nerve being only slightly affected. This involves the lower part of the epiconus. Another type gives more pronounced involvement of the peroneal nerve, the glutei being only slightly involved. This is characteristic of lesions in the lower part of the epiconus. Whether such a sharp differentiation is possible or not, it is unquestionably true that although, as Minor stated, the nervus peroneus is most involved, there also occurs definite involvement of the nerves to the glutei and hamstrings.

The etiology of epiconus lesions is extremely varied. Any disease affecting the spinal cord may of course involve the region of the epiconus. All the cases originally described by Minor were traumatic in origin. Poliomyelitis, syphilis, tumor, and spina bifida occulta have been reported as causes of epiconus lesions.

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FAMILIAL FORM OF ENCEPHALITIS PERIAXIALIS DIFFUSA

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(Continued from page 354)

In the cortex we also have a proliferation of the neuroglia which is especially seen in the inner layers, where the gliosis is mostly of the fibrous type. The medial layers show a very few fibrous glia cells while the outer layer, the lamina molecularis is the seat of quite marked protoplasmic and fibrous reaction as shown by the numerous neuroglia cells with enlarged body and prolongments. The increase in the neuroglia fibers is so pronounced in some areas of the molecular and tangential zones that a quite intense marginal gliosis is detected. Figure 14 shows what a deep covering of glia fibers is revealed along the marginal area and how the molecular area participates to the peripheral gliosis.

Alzheimer stain for neuroglia (Mallory hematoxylin) and *Cajal gold-sublimate*: These methods allow a careful study of the neuroglia cells and a division of the various types of cells can be made on the basis of the morphological characters. The neuroglia cells which appear very numerous both at the bordering line of the white and gray matter (Fig. 15) and all over the white substance (Fig. 16), may appear more or less collected around the blood vessels (Fig. 17). From the morphological point of view the neuroglia cells as stained by the Alzheimer method can mainly be classified as follows: (a) quite small glia cells the nuclei of which appear normal and are surrounded by a very thin layer of unstained cytoplasm; (b) neuroglia cells the nuclei of which are apparently normal and surrounded by a small amount of protoplasm from which normal prolongments are outlined; (c) large neuroglia cells in a phase of active reaction showing an enlarged well developed nucleus with all signs of activity. Their cytoplasm is quite enlarged and deeply stained and so are the prolongments. They have the appearance of large astrocytes and they often possess quite large "sucker feet." The nucleus is eccentrically located and occasionally cells showing two and more seldom

3 nuclei are seen. The glia fibers cross the bordering area of the cytoplasm and are variously directed in the surrounding tissue. (d) Large



FIG. 13. Diffuse gliosis of the white substance. Fibrillary reaction (Holzer's method).

FIG. 14. Marginal gliosis. The glia reaction spreads into the outer layers of the cortex (Holzer's method).

gamästete cells and occasionally monster glia cells are encountered showing the typical attributes of such structures; (e) a few ameboid cells in a phase of more or less advanced degeneration.

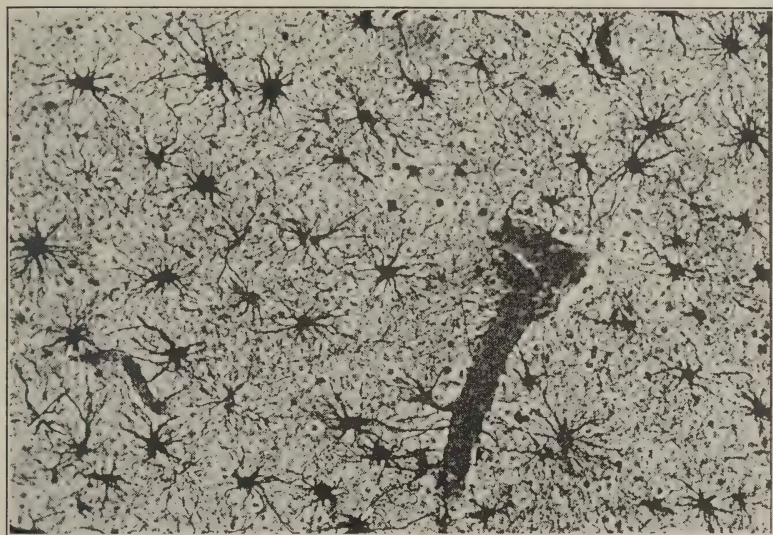


FIG. 15. Area of reactive gliosis of the inner layer of the cortex (Cajal gold-sublimate method).



FIG. 16. Hypertrophy of glia cells in the white matter (Mallory's hematoxylin).

It must be recalled here that the Mallory hematoxylin does not stain all the nuclei and some of them appear in both the nerve cells and glia cells as clear unstained vesicles. Some of the nuclei of the hypertrophic cells appear very large and occasionally reach 5 or more times the normal size.

As far as inclusions are concerned fatty granules are seen in almost all of the neuroglia cells with the exception of the first classified category. These granules are of variable size and generally occupy the side opposite to the nucleus. In Scharlach R and hematoxylin

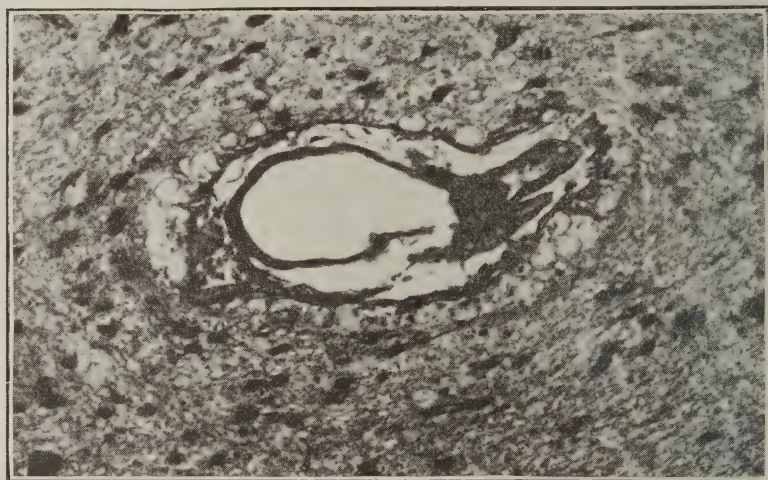


FIG. 17. Hypertrophy of glia cells surrounding a blood vessel. Globoid cells are seen all along the membrana limitans (Mallory's hematoxylin).

preparations, they appear brightly stained in red and all transitory form may be seen from cells containing a few granules to overloaded cells, which latter, however, are not numerous. The majority of these cells belong, of course, to the fixed type of neuroglia cells exercising the function of the fixed Abbau cells or Abraum-cells of Merzbacher. Occasionally transitory forms are seen between the fixed and the mobile type of Abraum-cells (fat-granular cells). In this case, the amount of included material is larger and only partially transformed in neutral fat. The residual material which does not stain brightly in red, preferably takes the hematoxylin and resembles in shade, the myelin bodies.

Waste Products: (Abbau products). With the Scharlach R and hematoxylin stain the main characteristic is the presence of

numerous globoid cells (Gitter cells) which are scattered throughout the section. These cells are more or less deeply stained with

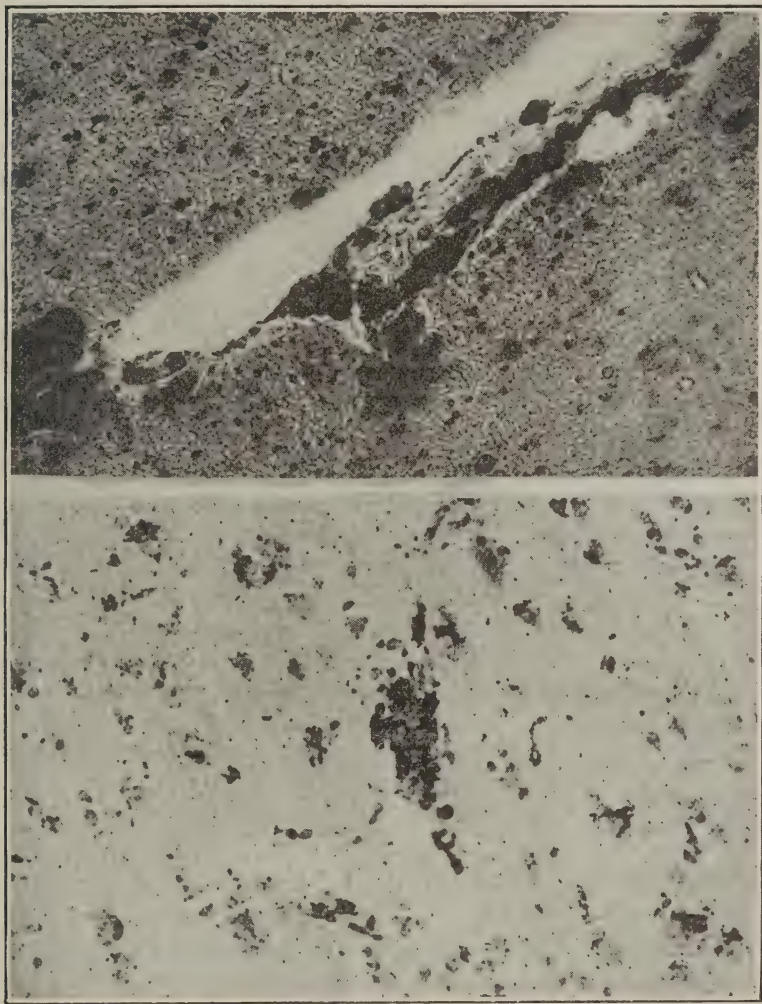


FIG. 18. Waste products in the perivascular spaces and vascular sheaths. Globoid cells are accumulated around the blood vessels (Scharlach R method).

FIG. 19. Waste products of the cortex. The waste products are seen in the perivascular spaces as well as inside the fixed Abraum cells (Scharlach R method).

hematoxylin and some of them even very deeply, as dark bluish red. These globoid cells are occasionally collected in clusters of 5, 10 or

more elements which form dark spots scattered in the white matter. They generally are collected in higher number in the areas where the myelin sheaths are better preserved, as for instance, in the area of the *fibrae arcuatae*. Besides the globoid cells, the myelin bodies are seen as numerous as previously described and their staining properties are very close to the Gitter cells.

All these cells and bodies do not stain brightly red with the Scharlach R but in a light brick color which, as I said, is somewhat the same shade of stain of the myelin sheaths. We must deal here with material which apparently has not undergone diffuse fatty transformations. This absence of fatty changes is seen also in the myelin bodies either free in the tissue or present in the perivascular spaces. However, in a very few of these globoid cells located in the perivascular spaces, more or less minute bright granules are occasionally seen surrounded by a large amount of light brick stained material. The hematoxylin reveals in these globoid cells the presence of a nucleus which often is eccentric and at times centrally located. At other times the nucleus seems to constitute the center of a collection of simple myelin bodies. In many of the globoid cells the nucleus appears deformed and more or less degenerated, its staining properties appear altered, at times deeply stained, at other times almost faded. Signs of more or less advanced kariorrhexis are also found and the nucleus appears then deeply stained all the length of its periphery while its contours are deformed and the whole formation is shrunken. The lesion of the nucleus is so far advanced in some cases, that the structure is only shadowed within the cell.

With the Scharlach R method, as it has been previously mentioned, brightly red stained material is detected within the hypertrophic neuroglia cells. These cells generally show more or less accumulated fatty granules at the periphery of the cell body although their nuclei are quite active. At times the neuroglia cells contain two nuclei, both enlarged and active. These nuclei are almost constantly seen at the periphery of the cytoplasm, and only a few cells with small protoplasma show both nucleus and fatty deposit centrally located. Besides the enlarged neuroglia cells showing quite active nucleus, other nuclei are encountered which are small and deeply stained. These small nuclei do not show, in general any surrounding protoplasm although occasionally some of them do possess a very slight amount of it. These structures do not contain fatty granules. Transitory forms between neuroglia cells (astrocytes) and Gitter cells, fat-granular cells are also found, as Parodi and Ricca have mentioned in their recent paper.

The fatty deposits are also seen free in the perivascular spaces where they are present as more or less large masses of brightly red stained granules. The majority of these deposits are free while a few are embedded in cells of apparently mesodermic origin. Fig. 18 shows a large amount of fat deposits surrounding the blood vessels while in two locations globoid cells and myelin bodies are also collected. Both globoid cells and myelin bodies still show in this location the same morphological and chemical properties as shown within the nervous parenchyma. The myelin bodies present in the perivascular spaces are generally free, isolated but also collected, as the globoid cells themselves. Occasionally a few globoid cells are seen free in the lumen of the blood vessel.

The fat changes are not localized to the white substance but diffused also to the cortex. The blood vessels of this region, even the smallest one, show a diffuse amount of perivascular fatty globules which are collected around the vessels. The fat globules which here are brightly stained in red may be also seen included in the mesodermic cells and usually located at the two poles of the cells. Some of the fat globules are, however, free among the cells and a certain amount of fat deposits is also occasionally seen inside the lumen of the blood vessel. Fig. 19 shows distinctly the blood vessels and capillaries of the cortex surrounded by fatty tissue as well as fatty inclusions in the fixed neuroglia cells which are brightly stained in red. (Fig. 20.)

In the cortex the type of Abbau seems to belong then, exclusively to the fixed type as no free cells of the globoid character as seen in the white substance are here encountered, neither in the nervous parenchyma nor around the blood vessels. It must be, however, recalled that the process in the cortex is not as severe a one as the one in the white substance.

The pigment of the nerve cells may generally be considered as slightly increased and even here and there cells are seen in which the pigment is decidedly increased although never spreading in the prolongments. The fat changes of the cortex impress more as the expression of the Abbau process than of pathologic changes taking place in the cortex itself. As a fact the neuroglia cells of the lamina molecularis are especially involved by the Abbau process and quite many fatty granules are there detected. It must not be forgotten that demyelination has certainly taken place also in the cortex.

The meninges themselves distinctly participate to the removal process as proved by the appearance of diffuse amount of these fatty granules embedded in the mesodermic cells or collected around the meningeal blood vessels (Fig. 21).

Osmic Acid Impregnation: The results with this method are interesting as the osmic black granules are especially located in the cortex. (Fig. 22.) Besides the lipoid pigment of the nerve cells numerous more or less black granules are seen in the neuroglia cells

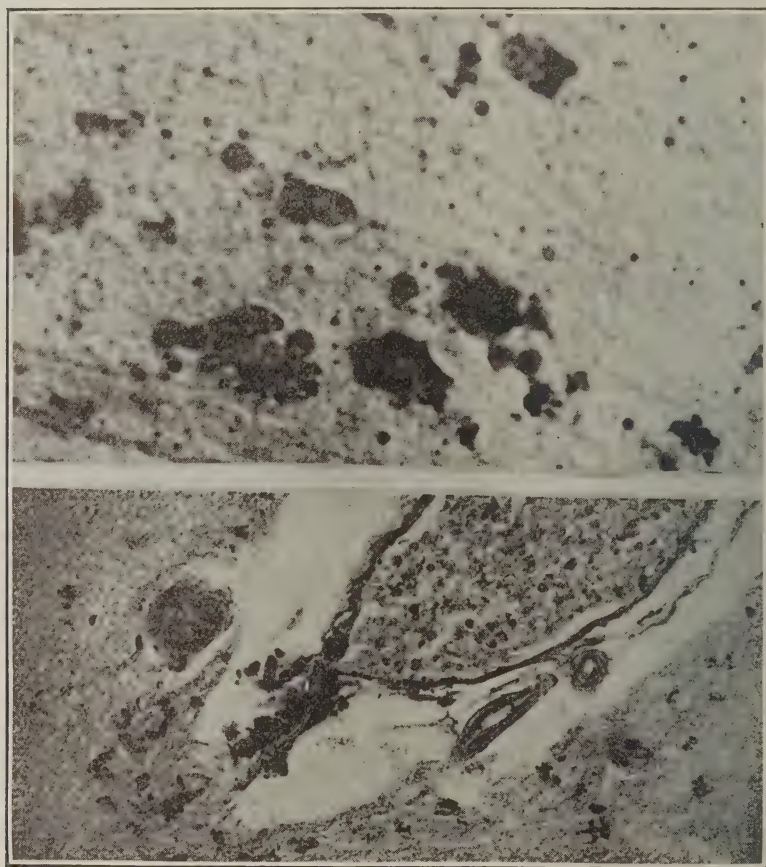


FIG. 20. Details of the fixed Abbau process. Fat tissue embedded in fixed glia cells (Scharlach R method).

FIG. 21. Waste products in the meningeal blood vessels (osmic acid impregnation).

generally occupying the pole opposite to the nucleus. These granules are especially seen in the cells of the middle and inner layers while external layers are less affected by their presence. Similar granules are seen also collected around the blood vessels, partly free in the perivascular spaces and partly in the cells of the vascular sheaths. Con-

versely to what is noticed in the cortex, the amount of osmic granules is very little in the white matter and only occasionally here and there glia cells are seen in which a few granules are embedded. The

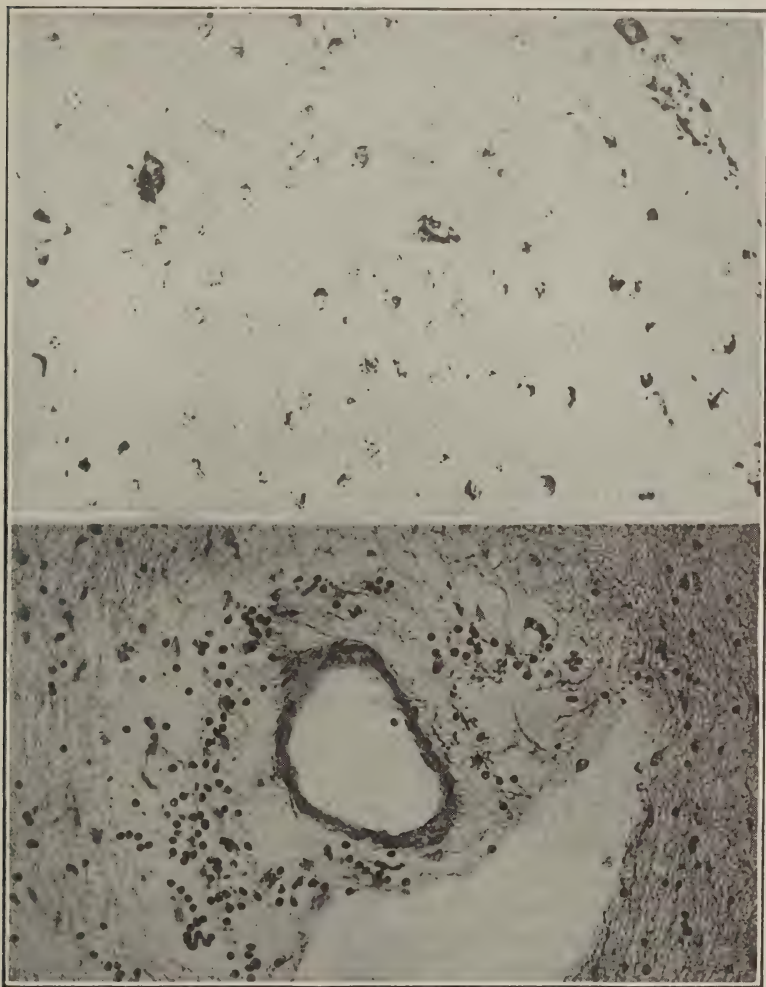


FIG. 22. Waste products of the cortex (perivascular spaces) and fixed Abbau neuroglia cells (osmic acid impregnation).

FIG. 23. Perivascular infiltration: Abbau cells and lymphocytes. No plasma cells.

majority of these cells are free of osmic products while, as said before, they are diffusely loaded with Scharlach R stained deposits. It is presumable that this difference in the behavior of the gray and

white substance is the expression of a difference in the stage of degenerative process. Osmic phase which is the first one to appear chronologically indicates probably that in the cortex besides the fat changes related to the Abbau process there must be a more recent phase of degeneration as represented by the osmic acid reaction.

Blood Vessels: The blood vessels show no proliferative nor degenerative changes. Here and there in the white matter there is, however, a slight degree of perivascular infiltration formed exclusively of small lymphocytes and Gitter cells while no plasma cells are encountered. The nature of the exudate points out that this perivascularitis may be the expression of a general Abbau process. Bertrand and Van Bogaert have especially called attention to this fact and Hassin too thinks that in multiple sclerosis the perivascular infiltration is simply related to the Abbau function.

In my cases lymphocytes were at times undoubtedly present among the perivascular cells (Fig. 23), but one must recall that perivascular infiltration has also been described in simple degenerative processes. In other words we deal here with the so-called symptomatic type of inflammatory reaction (Spielmeyer) or reparative type (Aschoff), not indicative of a true inflammatory process.

Besides the lymphocytes, the perivascular infiltration is largely formed by globoid cells and myelin bodies. Both these latter are seen free in the perivascular spaces, and occasionally even in the blood vessel lumen. Nearby the globoid cells (Gitter cells) there are free droplets of neutral fat brightly stained with the Scharlach R. They too are seen in the perivascular cells and the vascular sheaths themselves. There is no doubt in my mind that the Abraum-cells embedded in the blood vessel walls may be of ectodermic origin. This view, supported by Nissl, but not accepted by Merzbacher appears to me clearly evidenced by the transitory pictures showing different phases of the passage of these cells into the blood vessel walls. Another reason for supporting this point of view is the fact that in many places the ecto-mesodermic barrier seems to have broken, the two tissues, ectoderm and mesoderm, coming in closer contact. As a matter of fact the adventitia of some of the blood vessels has undergone very marked proliferative changes containing in its reticulum many fat loaded cells some of which are of ectodermic origin. I have, however, never seen the mesenchymal reticulum (nor with the Achucarro nor with the Klarfeld method) overlapping into the ectoderm and spreading into the nervous parenchyma. This spreading out of the mesodermic tissue in the ectoderm which has been noticed in some other pathological conditions of inflammatory origin

does not seem to belong to the process of the periaxialis encephalitis. The process of loosening of the adventitia reticulum is more like one resembling the so-called "Lockerung" of the German authors and which has been especially described in the degenerative process following the spinal cord concussion.

No new blood vessel formation is detectable and only in some of the areas in which secondary atrophy is more marked, here and there the blood vessels may give the impression of an increased number. This is not a true new vessel formation but belongs to the so-called "relative" type of blood vessel increase (Cerletti).

Nerve Cells: The cortical lamination appears generally well preserved. There are, however, here and there foci of rarefaction of the nerve cells but no changes recalling inflammatory or ischemic processes. The lesions which are occasionally seen in the nerve cells are of the acute degenerative type mainly swelling, discoloration and disintegration of the chromatine bodies. A few nerve cells show a shrunken appearance. The nuclei of the cells is somewhat enlarged—pale—and swollen. Occasionally cells are seen showing the characters of the retrograde degeneration. The swollen nerve cells may undergo complete disintegrative changes as well as a process of neuronophagia.

Extension of the lesions: The lesions are all through the brain, of the same fundamental type as already described. There is only a question of intensity which differentiates some of the involved areas. For instance, in the brain of Case No. 1 the occipital and frontal cortex show rather severe lesions while the parietal and temporal lobes are somewhat less intensively affected. However, even in these regions the lesions are evident and the hippocampus appears microscopically quite well damaged. Both the lamina pyramidalis of the Ammon's horn and the small pyramidal cells of the fascia dentata are affected. Waste products are seen in both the gray and white matter of the region. With osmic acid impregnation the black granulations are here mainly localized in the gray matter, being very scarce in the white.

The corpus callosum as well as the internal capsule are both involved by the process. In the basal ganglia the strands of white matter show quite definite involvement. The degenerative process is, however, of slight intensity although Abraum-cells (Gitter cell-globoid bodies) are seen in a fair amount, partially isolated or partially collected in small clusters.

In the pons and medulla oblongata secondary degeneration is

present, especially affecting the pyramidal tract (Fig. 24). The spinal cord shows in both the cases I have examined, lesions of the secondary type as seen in Fig. 25. Here we see how the pyramidal tracts, both the direct one and crossed one, are involved by the process. This degeneration is presumably the result of the marked involvement of the motor pathway in the brain. The figure shows also a slight

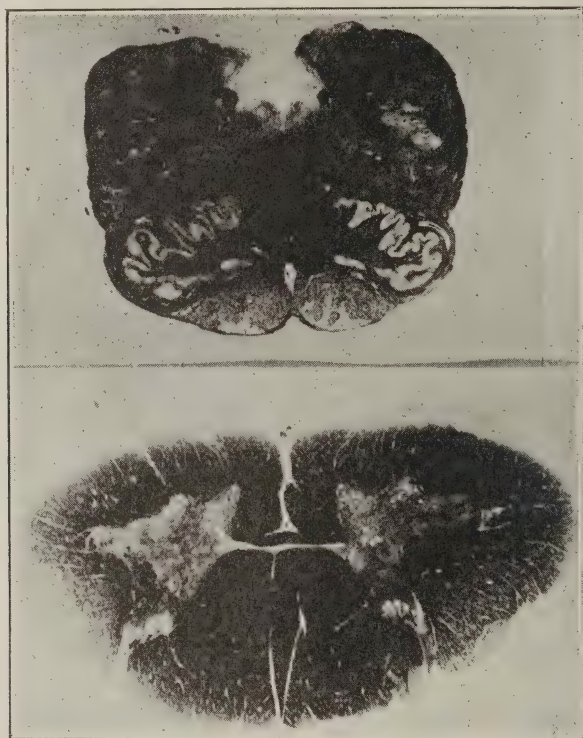


FIG. 24. Secondary degeneration of the pyramidal tract (Weigert method).
FIG. 25. Secondary combined degeneration of the spinal cord (pyramidal and cerebellar tracts). Weigert method.

diffuse demyelination of the antero-lateral as well as of the posterior columns.

The motor cells of the anterior horn show a tendency to chromatolysis. Some of the cells are also shrunken with a deeply stained and deformed nucleus. The pigment of the nerve cell is slightly increased in some instances and the neuroglia reaction is especially marked along the bordering line between white and gray matter.

In the cerebellum there is a diffuse spreading of the lesions all

over the organ. Here, however, the lesions are not as pronounced as they are in the brain although in one of the cases (R. J.) the demyelination was quite severe in some areas (Fig. 26). The areas of demyelination are diffuse and differ from the cerebral lesions (especially in the case of Ra. J.) only from the intensity point of view, being of far less advanced degree. The cerebellar cortex is slightly affected and the molecular zone shows presence of fat granules in the blood vessel sheaths as well as in the perivascular spaces. In the lamina granularis the nerve cells are markedly loose in texture. The Purkinje cells show moderate increase in their pigment and a certain amount of chromatolysis. The cells of the dentate nucleus show rather diffuse acute changes. The glia reaction all over the organ, although of moderate degree, is the same in type as the one described in the brain itself.

Meninges: The leptomeninges themselves distinctly participate to the Abbau process as proved by the presence of a diffuse amount of fat granules included in the mesodermic cells or collected around the blood vessels. I have not encountered perivascular infiltration in the blood vessels of these structures.

The Optic Nerve: The optic nerve (in both R. and Ra. J.) shows quite marked and diffuse degenerative changes in two of the cases as represented by the breakdown of the myelin sheaths, the presence of the Abbau process and the degeneration of numerous axis cylinders. Fig. 27 distinctly shows diffuse areas of degeneration involving the optic nerve as well as the chiasma. The demyelination affects more prominently the direct temporal bundles than the crossed mesial component.

Ependyma: The ependymal cells, especially those of the lateral ventricles, show quite diffuse fatty changes, the fat granules being unusually numerous both inside and outside the cells. The subependymal layer shows a collection of fat tissue surrounding the blood vessels or embedded in the neuroglia cells which are quite hypertrophic and possess large active nuclei.

Comments

A point which I would like to emphasize in this peculiar pathological process is the one concerning the significance of the globoid cells which are diffusely scattered in the white matter. I have no doubt about the derivation of these cells from the neuroglia cells which fact is sustained by both the morphological structure and the study of the transitory forms. It is well known that the Abbau function is divided according to Spielmeyer in a simple glial type and in a mixed

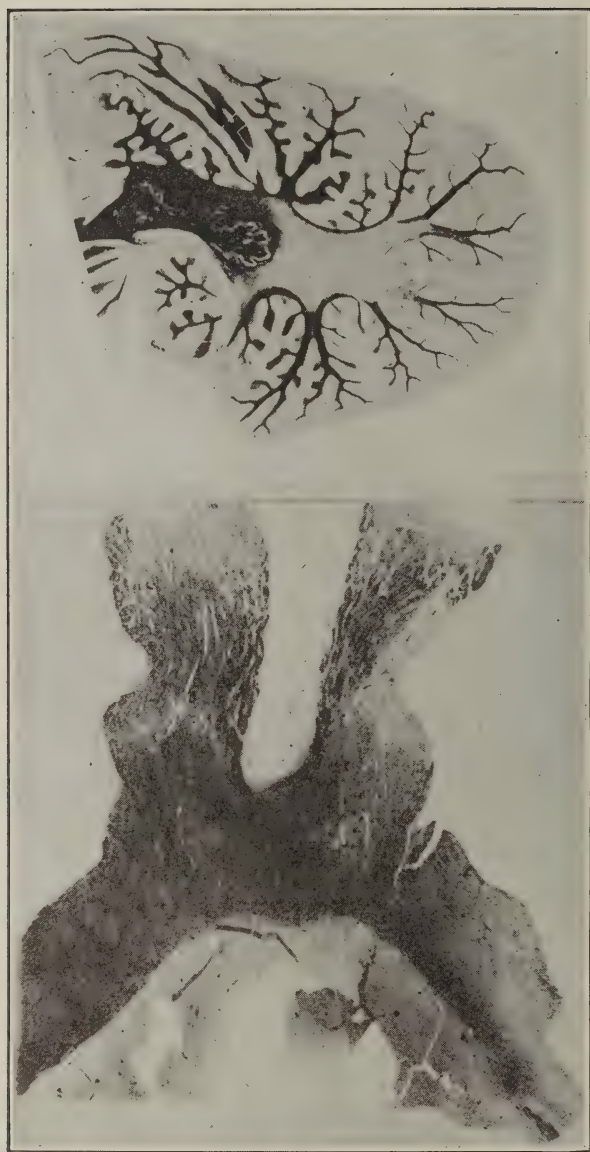


FIG. 26. Demyelination of the cerebellum (Weigert method).

FIG. 27. Optic chiasma and optic nerves. Diffuse degeneration especially of the right direct tract (Weigert method).

type: glial and mesodermic. In the simple glial type the transport of the products of disintegration is dominantly if not exclusively

taken up by the glia cells which are fixed or mobile in type. Cells of the fixed type absorb the disintegrated products and elaborate them *in situ*. The elaborated waste products are then poured out into the ordinary circulatory channels. The embedded Abbau products are easily recognizable with the Scharlach-R method as brightly stained granules or droplets. The cells of the mobile type are also supposed to absorb and elaborate a large amount of waste products and finally transport them towards the blood stream. In order to perform this special function the cells are freed from their normal attachments, become mobile and direct themselves toward the blood vessels. Having reached this region they meet the ectomesodermic barrier represented by Held's glia membrana limitans. How does it happen that these cells pass through this membrane? It is still an unsolved problem. If the membrane is involved by the process and swelling of its elements as well as breaking off its normal attachment occurs, the explanation would then be easier. We unfortunately lack a detailed study on this subject. Alzheimer thought that the waste products at this end limit between the ectoderm and the mesoderm were possibly discharged from the mobile cells and thus being able to pass through the aforementioned membrane. The mesodermic tissue would then participate to the Abbau process by proliferation of its elements which load themselves with the already elaborate waste products carrying and discharging them in the blood stream.

I do not intend here to discuss the value and significance of the fixed type of cells (fixed Abraüm-cells of Merzbacher) but I wish to make some remarks concerning the peculiarities of the mobile type of cells (mobile Abraüm-cells) as they appear in my special cases. The first question that came to my mind is the following: Do the special glia cells which in my cases constitute the mobile type of Abbau, really possess a special vital activity which enables them to incorporate and elaborate the waste products? According to Merzbacher the reticular structure is preformed in the young Abraüm-cells and may be seen before the appearance of any foreign inclusion, the reticulum being strictly connected with the supposed function of the cell. I must remark, however, that in his paper, Merzbacher was dealing with experimental material in which the Abbau process was of the mixed type and that the term of young form of Abraüm-cells was essentially referred by him to the cells of mesodermic origin which were the only ones seen in the very early stage of the lesion. At any rate, according to this author, the power of absorption of the Abraüm-cells is a quite active one, related to the specific function of the cell.

It seems to me that such a statement has to be applied with caution in my special cases. The suspicion that the incorporation of foreign material in neuroglia cells may not always be the expression of the particular activity of the cell, has attracted my attention following these two evidences: (a) Evidence that the Abbau process may take place independently from the Abbau cells; (b) Evidence of severe diffuse degenerative changes in the mobile *Abraüm*-cells.

As far as the first consideration is concerned I must recall the tendency of the myelin bodies to assume a round shape formation which is the form of the mobile type of *Abraüm* cells themselves (globoid cells). We may easily see in my preparations that a large amount of the myelin bodies resulting from the breaking up of the myelin sheaths are free in the tissue, their number being quite conspicuous and almost equal in amount to the globoid cells. Some of these free myelin bodies are even seen closely collected around neuroglia nuclei, giving in some instances the impression of a cellular unit. It is in fact a possibility, that I have established in a previous work, that myelin substances may be collected around the glia nuclei so as to simulate a cell formation. I have reached this conclusion by studying the action of the alcohol and especially of the nitric alcohol over the central nervous system. I have been able to establish that the action of the nitric alcohol on the myelin substances is followed by an accumulation of this material around one or more glia nuclei, tending to reach the perivascular spaces. In this location and even at the periphery of the section forms are seen grape-like in texture, fundamentally constituted of collected lipoid substances at the center of which one or more nuclei are detected. It is obvious that this nuclei have been transported by the accumulated material which they followed in their displacement. Such a possibility of course is easier to happen in pathological conditions where the myelin substances are freed by the breaking up of the myelin sheaths. This is why I found in my slides pictures of cells which proved by focusing to be artificial cell formations. It is then possible that a certain amount of this nuclei surrounded by the myelin waste material may disconnect their attachment and be carried toward the blood vessels. We do find indeed in the perivascular sheaths, or in the tissue immediately surrounding, a large amount of free myelin bodies as well as a few cellular-like structures, besides, of course, the numerous mobile *Abraüm* cells. It may be concluded that in the perivascular spaces both true cells and cell-like formation as well as free myelin bodies are encountered. The presence especially of the free myelin bodies in the perivascular spaces and in the vascular sheaths is important to be noted as it proves that the Abbau process may take place without the

necessity of incorporation of the waste products in transportation cells. It seems to me that if the phase of the inclusion of the mobile gliogenous Abraum cells may be overstepped, its biological importance is somewhat lessened. One of the fundamental principles of our biological activity is a principle of economy. Why should the nervous system sacrifice such a large amount of its neuroglia cells so useful in the process of nutrition and reparation, for transporting waste products, when this transportation can take place independently from them? This consideration is substantiated by the other one, *i.e.*, that the mobile cells in my cases do not seem to respond to one of the activities which they are essentially supposed to perform. I have pointed out the fact that with the Scharlach R and hematoxylin the Abraum cells content does not stain in bright red as part of the waste material detected in the perivascular spaces and in the fixed type of Abbau cells. This difference in the staining properties must correspond to differences in chemical aspects of the degenerated material. The Abraum-cell content stains very close as the myelin sheaths so that the staining properties are quite the same for the myelin sheaths, free myelin bodies and mobile Abraum-cell content. I must add that in some of the fixed Abraum cells in which the cell body contains granules and droplets stained brightly in red with Scharlach R, there is also a small amount of myelin-like material which stains somewhat red bluish with hematoxylin. A great majority, however, of the fixed Abraum cells contain only droplets or granules of a bright red color.

In the mobile type of Abraum cells the waste material does not seem then to undergo any chemical change pointing to its supposed elaboration nor is it shown that the waste products undergo elaboration before their discharge into the blood stream, as the staining properties do not change in the Abraum cells which have already reached the perivascular spaces, the vascular sheaths, or even the vascular lumen itself. This is true also of free myelin bodies which do not change their staining properties after having reached the perivascular spaces. Only very exceptionally did I find Abraum cells in which the included material had partially undergone staining changes. Collier and Greenfield have also described large globoid cells the cytoplasm of which gave with the Scharlach R only a diffuse pale brick color and which the authors suggested as having nothing to do with myelin destruction. Even in the smaller granular cells the same authors found that the majority of the granules did not stain intensively with the Scharlach R.

The second evidence I mentioned is the fact that a large amount of the globoid cells show signs of a more or less advanced degenera-

tion. The most important of them is the presence of nuclear degeneration which is seen quite obviously. I have already reported in the detailed histological description the particular degenerative aspects of these nuclei which at times appear hyperchromatic, at times more or less deformed, shrunken, and at times entirely disintegrated. There are of course cells showing quite normal nuclei, but these cells form a rather small minority. Degenerative changes, although in cells particularly stained in red with the Scharlach R, are reported in Fig. 204 of Spielmeyer's book on the histopathology of the nervous system as well as in Figs. 1 and 5 of the work of Merzbacher on the Abraum cells. This last author reporting the degenerative changes in the nuclei of the Abbau cells states that they may occur in all the stages of development, in the early stages as well as in completely developed elements. Regressive changes are described by Merzbacher in both nucleus and cytoplasm, and are supposed to be independent from the age and size and activity of the cell. Some of the Abraum cells undergo degeneration *in situ*, others degenerate far away from their original location.

The diffuse degenerative changes of the Abraumcells have suggested to Friedman the existence of a degenerative form of Abraum cells as represented by the mobile type, in contrast to the epithelioid form of Abraum cells represented by the fixed type of cells. While the degenerative form of Abraum cells are present in simple degenerative process, the large epithelioid cells are present in diffuse, intense, and inflammatory process, being characteristic for inflammation. I have recalled this particular view of Friedman's only to point out that other investigators have been quite impressed by these degenerative changes and doubtful about their real significance.

In connection with the afore discussion is the difference in the type of Abbau which I have found in the white matter and in the cortex. We all know of the existence of processes in which the Abbau is chiefly performed by the fixed type of cells while in others both the fixed and mobile type participate. According to Alzheimer the difference in type of the Abbau process resides in the nature of the disease besides its intensity. Spielmeyer believes also in a qualitative influence as well as in a quantitative one. But even admitting both of the possibilities I hardly can explain why in my cases the type of Abbau is so sharply different in the cortex than it is in the white matter, as while in the white matter the mobile Abraum cells are very numerous and scattered throughout the medulla, in the cortex no trace of them is seen at all. I am inclined to believe that in the white matter the presence of so many cells of the mobile type is in

a certain extent strictly connected with the waste material freed by the breaking up of the myelin sheaths, but I also believe that the qualitative factor has something to do in determining the type of Abbau. I only want to mention here a special form of disease: the Tay-Sachs familial form of amaurotic idiocy where the main histological lesions are located in the cortex and mainly consisting in the filling up of the nerve cells and prolongments with prälipoid material which Schaffer believes to be grossly lecithin. Now in this disease, where lipoid material is found in such abundance we find in the cortex typical mobile Abraum cells carrying waste product and which are seen collected around the cells and in the perivascular spaces. Schaffer thinks that the process by which the lipoid material is taken by the neuroglia cells is presumably a process of osmosis.

All the data afore mentioned concerning the Abbau process and the morphology of Abraum cells tend to show that the Abraum cells may not respond to a biological necessity, at least in cases like mine. In support of this I recall again the fact that waste material derived from the breaking up of the myelin sheaths freely reaches the perivascular spaces. If any biological necessity was to be found in the inclusion of waste products in transportation cells we could hardly see why free transportation and in such a large extent takes place. On the other hand, the fact of the severe degenerative changes which I mentioned, especially in the nuclei of the majority of these gliogenous cells hardly stands with active properties as required in such an important function of elaborating waste products. Nor may it be stated that the degenerative changes occur only after the cell has exerted its biological function, as Merzbacher clearly points out that the appearance of degenerative changes in the Abraum cells are independent from the age as well as from the intensity of function, having found very young cells with evident signs of degeneration. On the other hand, no signs of chemical elaboration of the included material is evidenced in the globoid cells of my cases. The included material has the same morphological staining and chemical properties as the myelin bodies free in the tissue. The dissolving properties of the mobile cells and of the free myelin bodies as tested by the action of xylol, alcohol, ether, pyridine, acetone, as well as staining properties, with the nil blue sulphate, Scharlach R, azure A, anilin blue, hematoxylin, cresyl-violet, Mallory hematoxylin, gold and silver impregnation, are quite the same for both the elements. The consideration that the mobile cells are quite more abundant where the degenerate myelin sheaths are more numerous (area of the arcuate fibers) leads to a close relationship between these cells and the myelin

substance. Where the degenerate myelin substance is only scarcely detectable, as in the most central areas of the cortex, or absent, as in the cortex, the number of the cells is respectively markedly smaller or totally absent.

All these facts seem to point out that in my cases the mobile Abraum cells mostly represent a degenerative form of the neuroglia cells. In other words, the neuroglia cells do not seem to possess enough vitality to exert a quite active function in the elaboration of the waste products, and seem rather to suffer from the action of the incorporated material. The penetration of this lipoid-like material in the neuroglia cells probably takes place by the same process of osmosis as supposed by Schaffer in the cortical lesions of the amaurotic idiocy.

An interesting question may arise here. Is the degeneration of these neuroglia cells the result of a lessened activity related to congenital weakness of these elements? This is a possibility to be taken into consideration before any conclusion is drawn concerning the general significance of the mobile Abbau cells. It is possible, in fact, as already pointed out by Scholz in his cases of diffuse sclerosis, that in the same way as the myelin sheaths and other parts of the nervous system are affected by the exogenous or endogenous agent the neuroglia cells may suffer of diminished vitality and be incapable then of carrying on their normal function, the death of the cell resulting as well as its passive displacement towards the perivascular spaces. The question acquires of course more importance in my cases, which are cases of a familial form of the disease and where an endogenous factor is presumably at the base of the whole pathology. This point needs some more investigation. I do believe that independently from a primary weakness of the neuroglia cells the mere fact of inclusion of Abbau products may play a pathological action even on some of the cells normally built. This is shown by the fact that even in other processes of the simple ectodermic type with no congenital background as well as in the ectomesodermic process (Merzbacher) we find many degenerative forms. Concluding, I think (1) that a large amount of the mobile gliogenous cells in my cases represent a degenerative form of the neuroglia cells; (2) that possibly a primary deficiency of the neuroglia cells is at the base of the failure in the elaboration of the Abbau products; (3) that the process of Abbau as performed by the mobile type of neuroglia cells does not appear to be indispensable for the Abbau process.

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(To be continued)

SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY

THE FOUR HUNDRED AND THIRTY-SIXTH REGULAR MEETING, MAY 3, 1927. THE VICE-PRESIDENT, DR. LOUIS A. CASAMAJOR, PRESIDED.

A FEW REMARKS ON THE DEEP PAIN SENSE IN TABES DORSALIS

JUNIUS STEPHENSON, M.D.

(Author's Abstract)

By the deep pain sense is meant the deep pressure pain sense of the calf muscles. The diminution of this sensation in one of the calf muscles is considered the first practical objective finding in the majority of cases of tabes dorsalis. It is agreed that alteration in the vibratory fields is the first morbid change, but this is not considered practical from the standpoint of the general practitioner to whom the early tabetic first goes for relief, inasmuch as few of them number tuning forks among their tools, and if so, the instrument would not be sufficiently acute to demonstrate the early changes. It is contended that the sequence of behavior in the early development of tabes dorsalis is as follows: First there would be an alteration of this sensation in one group of calf muscles, then changes in the ankle jerk of the same side, after which the same sequence in the other leg. The speaker felt that by the time the knee jerks are not elicitable definite spinal cord pathology is present. It was stated that in diseased conditions known to have their early morbid changes in the cord, such as subacute combined sclerosis, this phenomenon is rarely or ever present, and the speaker felt this argued for the peripheral origin of tabes dorsalis. The theories of the meningitic and neuritic or radicular origin were held tenable, and Dr. Stephenson contended that the behavior of the deep pain sense in comparison with that of the ankle jerk supported one or the other of these processes. He stated in certain cases there would be found an early and profound alteration in the deep pain sense with slight, if any, change in the ankle jerk of that side. In other cases, whereas the involvement of the deep pain sense is present, it is out of proportion to what might be expected in comparison with the considerable alteration of the ankle jerk. His explanation of this behavior was as follows: In the former the original process was a meningitis and there was pial constriction of the roots which produced two opposed effects, one an irritant, causing the shooting pains of tabes dorsalis;

the other a decrement, causing a block in the conveyance of the deep pain sense. For this reason he is of the opinion that ultimately the bundles conveying this particular sensation would be located near the periphery, hence the first to feel the constriction produced by the inflammatory changes in the pia. He further stated that one might assume a vague action of the toxin of syphilis in the root in this type, but the other chief factor is the element of compression. In the second case the great incident of the toxin is within the root itself, and being focused therein involved more of the structures, hence more involvement of the ankle jerk.

Dr. Stephenson presented no pathological proof of the interpretation, but asked for suggestions. He felt the phenomenon was an entity and hoped it would be stressed and disseminated among doctors at large with the view that its recognition might prevent many tabetic tragedies.

Discussion: Dr. Walter Kraus said: I think that the reason Dr. Stephenson asked me to discuss this paper was because he recalled that during the war and shortly thereafter I was much interested in the functions of the fasciculi which constitute peripheral nerves and roots. Under the guidance of Dr. Charles H. Fraser and in collaboration with Dr. Samuel Ingham, a good deal of work was carried out in this direction on the peripheral nerves and the brachial plexus. We did not get very much nearer a solution of the problem than did Sir Charles Bell in 1811. It is interesting that Ingham and I, publishing more than one hundred years after Bell, felt that we did not know very much more about the functions of the fasciculi than he did.

Any thesis regarding the effect of constriction of the roots in contrast to the effect of a parenchymatous lesion is extremely difficult to maintain, for the simple reason that we have no knowledge of the anatomical functions of fibers within the roots.

However, I think that Dr. Stephenson's idea may be used for an explanation for the presence of a sensation of pain in the absence of reflexes. We know that in disease of the thalamus, pons, spinal cord roots, and peripheral nerves, there may be an immense amount of hyperesthesia and subjective pain. The lightning pains of tabes belong in this group.

All of the severe pains felt in the disease of the pathways of pain leading into the thalamus are properly called causalgias. Not only will irritation of the nerve fibers inside or outside the central nervous system produce this causalgia, but interruption may bring about the same result. The central stumps and those fibers will be irritated by scar. In a constricting lesion the knee jerk will be absent because it is a very fragile reflex and at the same time, due to irritation, the patient will be extremely sensitive to squeezing of the Achilles tendon. In a parenchymatous lesion both reflexes and the sensation of pain may be absent. I think that it is important for us to examine cases of tabes dorsalis for this subtle difference which Dr. Stephenson has made, and then if we are so fortunate as to obtain the spinal cord post-mortem, we may make certain whether Dr. Stephenson's thesis

that a parenchymatous lesion of the root will produce one syndrome and a constricting meningitis will produce another is borne out pathologically.

THE CONNECTIONS OF THE PARS SUBOCULOMOTORIA OF THE SUBSTANTIA NIGRA.

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(Author's Abstract)

The substantia nigra has acquired great importance since the development of the studies on the extrapyramidal system. Although Vogt was still uncertain as to the belonging of the substantia nigra to the extrapyramidal system, further studies have undoubtedly established this relationship.

Von Monakow, who especially took into consideration the cortical connections of the substantia nigra, believes that this formation depends from the sigmoid gyrus and third frontal convolution. The dependency of the substantia nigra from the cortex was supposed by v. Monakow to be of the same type as the optic thalamus, meaning that the axones of its cells reach the cerebral cortex. The v. Monakow views were almost generally admitted and even Ariëns Kappers in the first edition of his fundamental work of comparative anatomy subscribed to the same idea. Here and there, however, an anatomical suggestion is found that the substantia nigra may depend from the basal ganglia (Tarassewitch, G. Holmes, Jakob, etc.). Among the others, Langley and Grünbaum explicitly state that following the removal of the basal ganglia only a few nerve cells of the collection remained in the mesial region of the substantia nigra while this region was normal in a case where only the cortex was removed.

Mirto believes that the axones of the substantia nigra are sent into the tegmentum, although he was not able to specify where they end. Cajal thinks that they cross the midline to reach the opposite side, while for Amaldi these axones are directed towards both the tegmentum and the pes pedunculi. Mingazzini also believes that they go downward to the pes pedunculi, a direction which is also admitted by Karplus and Spitzer by the mean of their "Grenzbundel der Pyramide." Bauer states that the axones of the nigra go to the tegmentum where they connect this formation with other areas of the central nervous system by means of fibers which he calls "fibrae efferentes substantiae nigrae." Similar fibers have also been described by O. Marburg.

Connections established by the mean of fibers originating in the cortex and ending in the substantia nigra were admitted a long time ago by Meynert, Mingazzini, Dejerine, Obersteiner, etc., and recently Minkowski, Jakob, Foix and Nicolesco have emphasized their importance. Connections have also been established between the

corpus striatum and the substantia nigra by the way of nerve fibers going from the striatum to the substantia nigra. One important pathway for this connection is the "Kammsystem des Fusses" or tractus striopeduncularis of Edinger. Wilson mentions also nerve fibers going from the pallidus to the substantia nigra and the same connections are admitted by Vogt, Wallenberg, and Jakob. Connections between the corpus of Luys and the substantia nigra have also been found by Bauer, Marburg and by myself (fibrae subthalamicae—substantia nigra). Besta and Jakob speak of connections between the thalamus and the substantia nigra, while Hatschek and Schlessinger mention the connections of the nigra with the lateral pontine nuclei.

Jurmann and Bechterew admit connections between the substantia nigra and the posterior white columns of the cord by means of fibers from the nuclei gracilis and cuneatus. Kolliker speaks of fiber connections between the internal geniculate ganglion and the substantia nigra and Wechsler's observations confirm these findings.

Connections between the corpus geniculate laterale and the substantia nigra have been reported by Ziehen by the means of its "Kometenbündage" and Ziehen, Ganser, Wallenberg and myself have found connections between the pedunculus corporis mamillaris and the substantia nigra. Sterzi believed in direct connections between the substantia nigra and the tractus peduncularis transversus while Costaldi thinks that the connections are indirectly established by the means of the axones of the nucleus tractus peduncularis transversus.

In order to elucidate the question of the connections of dependency of the substantia nigra I have performed different series of experiments in cats, dogs, and rabbits. In the first series I have removed the frontal region and the gyrus sigmoides of the cortex. In a second series I have removed the whole cortex and in a third series I have removed the cortex plus the corpus striatum. The results of my experiments may be summarized as follows:

1. After removal of the frontal and sigmoid region no disappearance of the substantia nigra was found. This formation was smaller than the normal, but no noticeable disappearance of nerve cells could be detected.

2. Following removal of the whole cortex no disappearance of the substantia nigra was noticed. The whole structure was markedly reduced in size, but the fact is to be attributed to the degeneration of the pes pedunculi and to the disappearance of a certain amount of the stratum molecularis intercellularis. The nerve cells of the substantia nigra were slightly diminished in size, but noticeable disappearance of them could not be detected.

3. Following the removal of the cortex and of the neostriatum (nucleus caudatus and putamen) there was a definite disappearance of cells of the substantia nigra, disappearance which was not however localized but diffusely distributed to the whole structure. The disappearance of the substantia nigra was proportionate to the removal

of the neostriatum. The removal of the neo- and paleostriatum was followed by an almost total disappearance of the substantia nigra. There were however a few nerve cells which were preserved in this formation even after removal of the whole cortex and striatum.

I concluded then, from these experiments, that the majority of the axones of the substantia nigra do not go to the cortex, as v. Monakow and others believe, but they go to the corpus striatum, and the pallidal portion seems of a greater importance. We must then refute the conception of the substantia nigra depending from the cortex ("Grosshirnanteil") and substitute for it the conception of dependency of the substantia nigra from the corpus striatum.

I wish to emphasize that I do not deny the connections of the cortex with the substantia nigra. I do admit them and believe them to be very important but these connections are not connections of dependency. In other words, the corticonigric fibers constitute, so to say, an afferent pathway of a reflex which presumably takes place in the substantia nigra, the efferent pathway of which is represented by the nigrostriate nerve fibers.

In my previous studies of the substantia nigra, of which I have summarized the results, I was struck by the presence, in the mesencephalon of the cat, of a special collection of nerve cells which I found located between the nucleus of the third nerve and the mesial portion of the substantia nigra. This group of cells is a bilateral one, situated on each side of the medial line, and has an oblique course directed dorsoventrally and from inside outside. This group was first mentioned by me as a nucleus linearis suboculomotorius.

In order to establish the connections of this special group of cells I have performed a new series of experiments on cats, following the same scheme as traced in the previous part of this note. The conclusion which I reached may be summarized as follows:

1. Removal of the whole cortex does affect this special formation.
2. Removal of the cortex plus a portion of the corpus striatum partially affects this group of cells as a certain number of them disappear.
3. A total removal of the cortex and of the striatum is followed by an almost entire disappearance of this group of cells.

I felt authorized then to conclude that the connections of this special group of cells are fundamentally the same as the one of the substantia nigra, and, as this group is in relation of continuity with the main part of the substantia nigra, I drew the conclusion that we must consider this group of cells as a mesial prolongation of the substantia nigra which reaches the ventral portion of the nucleus oculomotorius.

I tried to locate the same nucleus in man, but lacking serial sections material, I was only able to establish between the substantia nigra and the nucleus oculomotorius the presence of pigmented nerve cells which are disposed in a lineal and oblique direction as the pars suboculomotoria which I have described in the cat. To be sure of the belonging of these cells to the substantia nigra I tried to trace

these cells in cases of chronic epidemic encephalitis. I was able to establish that in connection with the disappearance of the main portion of substantia nigra the cells of this lineal portion were also absent.

Altogether I am authorized then to believe that the lineal group of cells which I found in the cat does belong to the substantia nigra of which they represent a simple mesial prolongation. As far as the function of this special portion of the substantia nigra is concerned I hardly can say anything, as the functions of the main portion of the substantia nigra are still a debatable question. I may, however, advance the hypothesis that, due to the relationship of vicinity to the nucleus oculomotorius, a correlation might be established between the muscular tonus of which the substantia nigra is supposed to be a regulating center and the ocular movements.

Discussion: Dr. Walter Kraus said: I should like to ask whether the nucleus cupuliformis, which lies at the caudal end of the red nucleus, is related to the nucleus suboculomotorius.

Dr. Ferraro replied that there was no connection between the two.

Dr. Louis Casamajor said: This paper interests me from many points of view. One is the question of the relation of this particular study to the pathology of epidemic encephalitis; as to whether the disappearance of the cells in the substantia nigra might be secondary to a disturbance in the striate body. I would wonder just what this disappearance of cells means. I do not know anywhere else in the nervous system where simply injury to the fiber causes disappearance of the cell, and I am wondering whether that could not be more a matter of staining than a real loss of cells. In amputation of a limb there have been a number of studies that show that the cells do not tend to disappear from the anterior horn at all. They remain throughout life in the condition of central chromatolysis. There have been a number of observations made after many years. I wonder why these cells disappear. Do they disappear because the end of their axones is cut, so that they can no longer function as nerve cells? Possibly the nerve impulse flow is the other way, and these cells are altered by the fact that they are cut off from their natural stimulus from above. Dr. Ferraro gave the impression as though the flow from the substantia nigra to the later developed structures of the striatum, but still I feel very much in doubt as to why the cells disappear simply because they are unable to function.

Dr. Ferraro (closing) said: As far as the clinical point of view in encephalitis is concerned, I have asked myself if some of the cells which disappear in the chronic stage of encephalitis disappear as the result of a lesion of the striate body. I do believe that probably a few of them may disappear following the specific lesions of the striate body, but as a fact in epidemic encephalitis, I am more inclined to believe that the substantia nigra being a seat of election for the infection, its destruction is more a primary than a secondary one. It would be more likely a secondary destruction if we consider such cases as Wilson's disease, pseudobulbar paralysis or any other process in which we have areas of softenings of the striate body.

In these cases we may correlate the disappearance of cells with the destruction of the corpus striatum. Why do the cells disappear in the substantia nigra when we remove the striate is according to the principles of the Law of Gudden. We know that the retrograde degeneration of the cells follows, a different rule if we consider the newborn, the young, or the adult animals. I have operated on young animals. In those cases the law of Gudden holds true as following a cut of the axone there is a true disappearance of the cell from which the axone originated. It is in accordance with this principle that Monakow, Nissl and Gudden himself have based their fundamental studies on the structure of the nervous system; (connections of the thalamus, red nucleus, and corpus geniculatum laterale). I do believe then that in my cases we deal with a real disappearance of cells and not with a loss of stainable properties.

CEREBRAL CICATRIX—THE REACTION OF NEUROGLIA TO BRAIN WOUNDS.*

P. DEL RIO-HORTEGA AND WILDER PENFIELD

(Abstract by Dr. Penfield.)

The study is an experimental one devoted to the change of neuroglia astrocytes about brain wounds. The authors point out, however, that microglia cells play a very important active part in the wound itself. In the early days after the infliction of the wound, all transitions could be seen from ramified spiderlike microglia cells such as are seen in the normal cerebrum to compound granular corpuscles in a zone immediately about the wound. Mitotic division of these cellular corpuscles at the wound margin began as early as the third day. After the product of destruction had been cleared away, as for example on the 52nd day after a small stab wound in a rabbit's brain, microglia cells appeared in the scar itself in a complicated form resembling that seen normally in the cortex of the brain. No evidence was seen of transition from neuroglia astrocytes or oligodendroglia to compound granular corpuscles.

It is pointed out that oligodendroglia plays no part, so far as could be seen, in the wound reaction. As a result of direct injury these cells seem to disappear the same as nerve cells.

Neuroglia astrocytes pass through definite phases:

1. *Swelling.* At the end of 24 hours the astrocytes in the margin of the wound are swollen. On the third day it can be seen that the astrocytes closest to the wound are irregularly swollen and expansions fragmented. They are undergoing the destructive amoeboid change of Alzheimer or clasmotodendrosis and contain coarse granules. Further removed from the wound the cells are diffusely swollen and contain fine granules. This latter change precedes multiplication.

2. *Division.* As early as the third and fourth day after a simple

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wound the astrocytes whose nuclei have enlarged show evidence of direct division. Each of the daughter cells takes to itself certain of the parent expansions. No evidence of mitotic division of neuroglia was seen.

3. *Fibrillation.* Regardless of whether the astrocyte was protoplasmic or fibrous before the wound was made, the astrocytes on the border of the wound lay down fibers. By the 19th day a well defined zone of hypertrophied fibrous astrocytes is seen and a fairly sharp line of demarcation is seen from the astrocytes of the brain. With the formation of fibers the astrocytes come to take on an arrangement like the spokes of a wheel. The larger expansions radiate towards the center of the wound.

4. *Contraction.* Small stab wounds almost invariably contain connective tissue at their core and in it a plexus of new formed vessels. New collagen fibers are numerous. It is about such wounds that the radiating arrangement of astrocytes is seen. Occasionally a stab wound remains gaping in part. This is particularly true in the white matter. In such a case there is no tendency to radial arrangement.

It is pointed out that in spite of the careful study of the stages of astrocyte change, using selective methods which demonstrate these cells with great clearness, there was no evidence of any transformation of these cells into mobile macrophages. It is felt that such a transition can be practically ruled out in brain wounds. Many macrophages were of course present, but their presence could be adequately explained by their derivation from microglia and possibly from the adventitial cells of the vessels. Increase in number of such cells is provided by their own mitotic multiplication at the site of maximum cerebral destruction. Thus the activity of these compound granular corpuscles in the wound resembles that of macrophages about areas of destruction elsewhere in the body, and they evidently have the same mesodermal origin in the central nervous system as in other organs of the body.

Discussion: Dr. Charles A. Elsberg said: There is very little to say concerning the interesting histological study that Dr. Penfield has made. If there is one thing one can say it is this: that it opens up a new pathological method of research into the convulsive states, and in the condition which we call epilepsy, and it would be very interesting to hear from Dr. Penfield whether he has had occasion to study the brains of epileptics in order to determine whether changes in the astrocytes, along the lines he has described in these brain wounds, have occurred as an indication of continual irritation of certain portions of the brain through the tensile pull of the changing astrocytes, both in the traumatic and in the so-called idiopathic epilepsy, and whether the old ideas of gliosis of Alzheimer and others have any connection with the changes he has described in these brain wounds.

Dr. J. H. Globus said: This is but one more demonstration of the excellent work of Dr. Penfield. It is not only excellent in complete-

ness and the care with which his problem was worked out, but it is also excellent because it opens up entirely new aspects on the question of scar formation in the brain. Dr. Penfield was exceedingly generous in giving us all that he has learned in Spain and in teaching us abundantly and clearly. Personally I have learned a great deal from him and I hope he will receive my praise of his work as an expression of gratitude.

Now, as to his findings, in experimentally produced brain scars: It is interesting to note that a similar process is seen in the healing of spontaneously produced brain wounds. Practically every stage he described in the experimental material can be seen in spontaneous lesions of this kind, which may be due to vascular or inflammatory disease. Now there is only one question that I want to ask Dr. Penfield. Can he be absolutely certain that oligodendroglia do not participate in the transition of the glial elements into granular cells? Can he be sure that this type of glia cell, giving off a short process here and there, does not form gitter cells? I think I have had sufficient experience, however, to agree with him that the other forms of glia, the astrocytes, do not take part in the formation of gitter cells.

Dr. Lewis Stevenson said: I was very much interested in this work of Dr. Penfield and have followed it step by step carefully because I have also been watching Dr. Hortege's work on the same subject. The one thing that I would like to hear a little more about is the microglia. It seems to me that the most dramatic thing in the healing of a brain injury is the tremendous migration of microglia cells to the aid of the brain which has been wounded. This thing has been worked out by Dr. Hortege and his preparations of the microglia, starting from the normal cell and showing all stages of transition, just as Dr. Penfield showed you in his drawing, are fascinating. I think they leave no doubt that these cells are microglia; that they are a third element in the nervous system, and that they are of mesodermal origin.

These microglia cells remove all the debris and take it to the subarachnoid space. Dr. Penfield has taken up the description of the process after this most dramatic thing has occurred.

I think the staining method of Rio-Hortega, the silver carbonate method, has made these studies possible. I do not think they were possible before, and I believe it is opening up not only a great field in neuropathology but in general pathology.

The stain is very easily made and used, and is easy to apply to tissues other than the brain.

Dr. Ferraro said: Dr. Penfield and Dr. Globus have agreed on the fact that the microglia is the only responsible factor for the formation of the granular cells, and that astrocytes do not participate in this formation. I do not think that such a statement can be fully sustained. I admit, too, that the microglia has a large importance in the formation of the granular cells, but we cannot deny that also the astrocytes do contribute to their formation. There are instances in

which we can very easily follow the transition from the normal astrocyte through several stages to the stage of formation of gitter cells; and I think that it is in this way that Dr. Hortega found the transition of his microglia into granular cells. So if we have to stand by the morphological transformation we cannot deny that the astrocytes do participate in the formation of the gitter cells. I have cases of encephalitis periaxialis diffusa in which the fact is clearly demonstrable. Of course there is a microglial reaction, but there is also an intense reaction of the common type of the neuroglia, with a gradual transition into fatty granular cells. If the astrocyte had nothing to do with the granular cells, I would like to ask how Dr. Penfield can explain the transformation of the fixed type of Abbau into a mobile one with final formation of gitter cells. I do not feel, then, it is possible to exclude the participation of the astrocyte in the formation of the reticular cells.

Dr. Casamajor said: Personally, I must heartily agree with what Dr. Globus has said. The clearness of these lantern slides is perfectly startling; and one can appreciate them only if one has tried to do the stains. It is not a simple matter at all. I think that Dr. Penfield has well proven his point that he started out to make to-night. This description of the healing of brain wounds follows very much along the lines that many others have described in the past, and Dr. Penfield has shown in this group of slides the real series of changes in this particular process. The question of the origin of microglia cells is purely one of academic interest. I was interested in hearing what Dr. Ferraro had to say about that. It seems to me rather interesting that one should make such a differentiation as he does. I have felt certain that the oligodendroglia likewise participates, and now that Dr. Ferraro has brought the astrocytes in, I think we are coming back to the view that Alzheimer held, although the various classifications that Del Rio-Hortega has offered us are surely part of our nomenclature for good. Those pictures of the astrocytes certainly are important in demonstrating the connection between the astrocytes and the mesodermal tissues, especially the blood vessels, so that the concept of the astrocyte standing as an intermediary between the blood vascular system and the nervous tissues is quite well borne out when one sees the tenacity with which the astrocytes adhere to the blood vessels and other tissues of mesodermal origin. The question of pull and strain, which Dr. Penfield mentions, must certainly play a part in our pathological concepts of the nervous tissues; and Dr. Elsberg's remark that here we have the possibilities of explaining some of the rather remarkable consequences of brain wounds and brain injuries that appear on the surface to have no connection anatomically with the part affected is material for thought. I wonder if we are not going to open up some new ideas in brain pathology, and perhaps get a little light on the pathogenesis of these common nervous diseases of which we are at present so much in the dark.

Dr. Penfield (closing the discussion): As Dr. Casamajor has pointed out, much of this work has been done before. Most of the stages of astrocyte change particularly have been described. We have endeavored to present the complete picture.

The application of the work to epilepsy of which Dr. Elsberg speaks is of importance and has interested me tremendously, but I know nothing about it from a practical point of view. You are familiar, of course, with the work of Syz, of Dandy, and of Elsberg, showing that if a simple wound be made in the brain of an experimental animal, the dose of convulsant necessary to produce an epileptic seizure is greatly reduced, and it has occurred to me that possibly the factor of local contraction and pull upon the vessels at a distance may help to explain the alteration in the threshold for convulsion.

Dr. Globus spoke of the possibility of transition of oligodendroglia into compound granular corpuscles. One has no right to say that one type of cell never develops into another. Nothing is more difficult than to be sure of transitional stages and surely many errors have been made in pathology and histology on the basis of fancied transitions. I have never seen what I thought was transition of oligodendroglia into compound granular corpuscles, and the most striking evidence against such a metamorphosis is the reaction of acute swelling of oligodendroglia either post-mortem or ante-mortem. This process causes oligodendroglia to swell throughout the brain but there is no production of compound granular corpuscles. Of that I am sure, as Dr. Cone and I have produced the phenomenon at will and seen clearly every phase. Post-mortem autolysis produces no change whatever in the microglia even up to forty-eight hours or even three days after death, whereas the oligodendroglia are found to be all changed. About a brain wound the oligodendroglia close to the margin are normal in appearance, while microglia show a local alteration. If the animal be allowed to lie for a certain length of time after death and opportunity given for post-mortem autolysis, the oligodendroglia become swollen throughout the brain, but not more so near the wound.

Dr. Ferraro spoke of the formation of compound granular corpuscles which is a battleground just now in neurological pathology, and he has voiced the attitude pretty much of the German school as I understand it. In their recent work on neuroglia they seem to adhere to contradictory points of view. For instance, Metz and Spatz agreed that compound granular corpuscles are formed from microglia and they think these compound corpuscles are mobile. They showed that iron pigment in general paresis is found only in the microglia. Then they go on to say further, perhaps in an effort to appease the shade of Alzheimer, that astrocytes also form compound granular corpuscles, but that these latter corpuscles are not mobile. Thus they must believe in two types of cells, mobile and a fixed compound granular corpuscle.

Evidently there is a confusion in our definition of these cells. Certainly neuroglia astrocytes are found with phagocytized substance in their cytoplasm, particularly when these cells are in a state of chronic degeneration. Some of the contained substances may have come from without, while other granules are the product of autodegeneration. Other types of fixed cells also are phagocytic, including nerve cells, as has been shown by the ingestion of lampblack. Neuroglia cells likewise ingest lampblack, but the fact that these

astrocytes are phagocytic in one sense does not mean that they are the mobile compound granular corpuscles with which we are so familiar. Metchnikoff pointed out the difference long ago between macrophage and ingestion of substance by fixed cells.

In certain nonspecific stains it is quite impossible to say that there is no transition between the swollen astrocyte and the microglia cell. In reading Alzheimer carefully you find, he says, sometimes, that the cells going to work on the products of destruction are fixed; and at other times he seems to say astrocytes are transformed into wandering macrophages. Supposing we accepted the mesodermal origin of microglia, we then have phagocytes in the brain quite comparable to the cells which become active in destructive processes elsewhere. Microglia does produce elsewhere compound granular corpuscles in the brain just as connective tissue cells elsewhere in the body also become phagocytic. The specific stain for microglia is one of the best methods to demonstrate these macrophages elsewhere in the body. As to their derivation elsewhere, I am not qualified to discuss that, but it seems evident that they are mesodermal, and it is possible to put phagocytosis in the brain and elsewhere on the same footing. It adds unnecessary confusion to go back to the view that oligodendroglia and astrocytes can form these macrophages unless we have very clear morphological evidence of it with specific stains.

CURRENT LITERATURE

I. VEGETATIVE NEUROLOGY.

1. VEGETATIVE NERVOUS SYSTEM.

Brancati, R. ON THE PATHOGENESIS OF DEATH BY BURNING, WITH SPECIAL REFERENCE TO THE STUDY OF THE NERVOUS SYSTEM. [Polyclin., XXXI. Med. Sc.]

A series of experiments on guinea pigs. The first group were treated by single or repeated burns; the second by subcutaneous injections of extract of liver of "burned" guinea pigs; the third by similar extract intraperitoneally; the fourth with such extract previously heated for three minutes to 100 degrees C.; the fifth with normal horse serum; the sixth with fresh extract of normal guinea pig liver. Ten photomicrographs of sections from the central nervous system are given. The clinical results suggest a close analogy with those of anaphylaxis, and are possibly dependent on some substance of the amine group: whatever it be, albumose, peptone, amine, it is to be found, not only in the blood and urine, but also in the internal organs of "burned" animals. Whilst the effects of injections of liver from such animals are closely similar to those produced by heterogenous serum, they differ from those due to injections of normal homologous liver. The agent, whatever it be, is thermostabile. The lesions in the central nervous system are similar to those found in anaphylaxis, both acute and of slow development. Various effects are produced throughout the organism: hyperemia and hemorrhages in all the organs, especially the brain; lysis of the elements of reticulo-endothelial tissue, in the medulla of bones, liver, spleen, lymphatic glands, and subcutaneous tissue; alterations in parenchymatous cells; of which those affecting the cerebrospinal axis are here detailed and illustrated. The clinical picture is that of anaphylaxis: the gross and minute pathological lesions are closely similar.

Källmark, F. ANGIONEUROTIC EDEMA OF THE GLOTTIS. [Hygieia, Nov. 30, 1924.]

This clinical history of a man fifty-five years of age, whose father had edema and possibly died of it, details the occurrence of recurring transient edemas involving the entire throat. The attacks came on when he was twenty years of age. Intubation had to be followed by tracheotomy performed once more. The case illustrates the grave prognosis of the disease, the impotency of internal treatment, and the need of sur-

veillance during the attacks; also is illustrated the failure to appreciate emotional factors in the edema of causality.

Novak, E. GASTRO-INTESTINAL ULCERATION FOLLOWING CUTANEOUS BURNS. [Am. Jl. Med. Sc., Vol. 169, Jan.]

In the case reported by Novak, death supervened on the tenth day after the accident, without any gastrointestinal symptoms having been noted, except vomiting. At the necropsy, multiple small ulcers were found in the stomach near the pylorus, and nowhere else. Acute nephritis also was present.

Warthin, A. S., Crane, A. W., and Jackson, J. B. PIGMENTATION OF THE SKIN (ADDISON'S DISEASE) ASSOCIATED WITH LYMPHOSARCOMA, INVOLVING PARTICULARLY THE RETROPERITONEAL LYMPH NODES OF THE SOLAR PLEXUS REGION. [Arch. Dermat. & Syph., Vol. X, p. 139.]

This is the report of a case of Addison's disease in a man of thirty-seven due to lymphosarcoma, apparently arising in the retroperitoneal lymph glands and causing a pressure atrophy of the solar plexus and adrenals. The duration of the disease was six years from the first symptoms. The pigmentation was of the Addison type, though there was none on the mucous membranes. The degree of pigmentation of the skin was extreme, and an interesting point is that the pigmentation in the subcutaneous lymph glands was confined to the subcutaneous surface of the glands. The pigment was melanin. There is a very detailed report of the post mortem examination, and a discussion of the resemblances and differences between Addison's disease and acanthosis nigricans which was the diagnosis originally made in this case. The article is illustrated by a photograph of the mass of glands in the solar plexus region, and by fourteen photomicrographs. The paper is further of interest to the dermatologist as well as the neurologist because of a discussion of the interrelations of the various pigmentary syndromes associated with abdominal pathology and endocrine involvement. Speaking of acanthosis nigricans, the pigmentary and papillary dystrophy of the skin associated in adults with malignant processes, in the abdomen and sometimes seen in juveniles without a malignant background, the authors emphasize the variety of clinical pictures included in the designation. Emphasis should be placed in these cases and in true Addison's disease upon atrophy of the chromaffin tissue as the etiologic background of the pigmentation. Warthin and his co-workers advance the view that pigmentation of the skin in these abdominal sympathetic syndromes is the result of the activity of reticuloendothelial cells lying in or near the walls of the capillaries of the corium, rather than of the activity of the basal layer of the epidermis. The source of cutaneous pigmentation is then, the chromatophore in the cutis, not the melanoblast in the epidermis. In the cases reported, a pigmentation of the surfaces of the lymph nodes nearest the skin leads the authors to infer that an actinic source such as roentgen-rays or light

is responsible for the formation of melanin. To quote their statement, "We may advance the hypothesis that, as the result of atrophy or destruction of chromaffinic tissue in the abdominal sympathetic ganglions and suprarenals, there is a disturbance in the production of the aromatic compounds of the pyrocatechin group (mother substances or precursors of suprarenalin) which, circulating in the blood, are taken up by the reticulo-endothelial cells of the corium and transformed into melanin under the action of light (ultraviolet) or oxidative ferments (dioxyphenylalaninoxidase)." The authors are not acquainted with the vegetative nervous system reflex arc activities playing between the melanophoses and the internal organs, as is being brought out in the many studies on actinic action on the skin.

Hannay, M. G. URTICARIA PIGMENTOSA IN ADULTS. [Brit. J. Derm. & Syphil., Jan., Vol. 37. J. A. M. A.]

An analysis of forty cases of urticaria pigmentosa at or near the age of fifteen leads Hannay to conclude that while a certain type of infantile urticaria pigmentosa may be rare in adults, the clinical characteristics usually encountered in adults are frequently seen in children, and cannot be said to constitute a distinct adult type. He suggests that with the present state of knowledge there are no adequate reasons for separating cases of chronic pigmentary urticaria from the main group of urticaria pigmentosa, whether the separation is attempted on the grounds of age incidence, clinical characteristics, or absence of mast cells.

Grön, K. DERMATOPHOBIA. [Tids. f. d. Norske Laege., Nov. 1, 1924, p. 969, B. M. J.]

Three characteristic cases of dermatophobia are here reported. The patients were women, and their ages were between forty-eight and sixty-five. Apart from dermatophobia, there was little evidence that they were mentally unbalanced. On the other hand, their attitude towards their supposed complaints was remarkably fixed, and, in spite of varied and protracted treatment, the results were unsatisfactory. One patient complained of intolerable itching; she associated this with a cutaneous eruption, the existence of which could not be verified. She insisted also that four of her children, her husband, her sister, and her brother-in-law suffered from the same complaint. She was treated in hospital in the hope that a complete change of residence and surroundings would eradicate her false impressions. Injections of her own serum were also given, but no permanent benefit resulted. In another case the complaint of itching was attributed by the patient to the unverifiable presence of lice. She described their size and movements, and insisted that her husband and son suffered in the same way. A physical examination was negative, and her general condition was good. In her case also hospital treatment had a palliative rather than curative effect. Grön finds that, apart from the dermatophobia of the definitely insane, this condition has received scant

attention in the medical press, but it is well defined, and the clinical picture in his three cases was remarkably uniform. In no case had there been any previous attack of skin disease or parasitic invasion to support the suspicion that there might be a persistence or recurrence of some previous complaint. In every case also the only lesion of the skin was that inflicted by the patient herself in her attempts to relieve irritation. A further feature common to each of these cases was the patient's passion for collecting portions of skin and scales for examination by her doctor. The author is pessimistic about the prognosis, and adds that this complaint may ultimately give rise to very troublesome hallucinations.

Battino, G. HERPES ZOSTER AND CHICKENPOX. [*Pediatrics*, Jan. 1, XXXIII.]

Battino concludes that the virus of chickenpox and of herpes zoster is identical or quite similar.

Golay, J. RELATION OF SYMPATHETIC SYSTEM TO DERMATOSES. [Rev. Méd. Suisse Rom., XLIV, Jan. 25, J. A. M. A.]

Golay illustrates this connection by the case of a woman, aged twenty-five, with dermatitis herpetiformis, of a year's duration, and further manifestations, which he cites in proof of the origin of the skin disease in disturbances of the sympathetic system. They are: (1) the preëruptive nature of the accompanying pruritus; (2) the extraordinarily symmetrical distribution of the lesions; (3) the hyperhidrosis, and (4) the acute exacerbation at each menstrual period. The final proof, he says, was the improvement of the condition by desensitization with own blood and later with protein therapy. Protein therapy, according to Rosenthal and Holzer, owes its action to a modification of the excitability of the sympathetic system.

Boeke and Heringa. PROTOPATHIC SENSIBILITY OF THE SKIN. [*Ned. Tijds. v. Geneesk.*, Jan. 3, Vol. 69.]

The junior author had an ulnar nerve palsy following a glass cut. His hand served as the basis for this extensive study in the course of which they came to be conclusions somewhat divergent from those of Head and Holmes. The details are too intricate for abstracting here but in general the work of J. Byrne seems substantiated.

Black, H. PERIARTERIAL SYMPATHECTOMY FOR TROPHIC ULCERATIONS OF EXTREMITIES. [*China Med. J.*, XXXVIII, Dec.]

In ten cases of trophic ulcer of the skin periarterial sympathectomy was done with great benefit. In two, the operation was performed for leprosy ulcerations. The results were excellent. These patients had lost several toes, and the stumps had remained ulcerated for six or more months. After periarterial sympathectomy, the stumps were healed within two weeks. This is the first report of performing this operation in leprosy, the author states.

Lévy-Frankel, A. and Juster. BIOLOGIC BASIS FOR TREATMENT OF DERMATOSES. [Médecine, VI, Sept., J. A. M. A.]

To treat, with topical measures alone, dermatoses which are only the manifestation in the skin of an internal nervous-endocrine derangement, is as absurd as to treat locally alone the skin lesions of the secondary phase of syphilis. Urticaria has already dropped its mask of an independent skin affection, and revealed itself as a symptom of a general upset in the colloid balance. The basal metabolism curve is the guide to treatment of skin lesions connected with endocrine derangement. On the other hand, pilocarpin and epinephrin give the clues for treatment of alopecia areata in many cases. Ingestion of thallium acetate induced alopecia areata in the rabbit. The same result has been obtained in animals by severing the posterior branch of the second cervical nerve, and A. Thomas witnessed a similar patch of alopecia in a soldier wounded in this region. Besredka's recent study of "local immunity" confirms the physiologic and specific therapeutic action of the cells of the skin.

Malmström, V. OBSERVATIONS RESPECTING THE SENSE OF PAIN IN SKIN EXPOSED TO ULTRA-VIOLET RAYS. [Acta Radiologica, Vol. III, 327. Med. Sc.]

Malmström has noticed that both sunlight and the rays from a quartz lamp in strong doses bring about changes in the skin's sense of pain, hyperalgesia often being manifest during the latent period between disappearance of the heat-erythema and the onset of the light-erythema. When the light-erythema is at its maximum, hyperalgesia is pronounced, the threshold value is low, and the sensibility to pain is intense in proportion to the strength of the irritant. Frequently the painful sensation lasts for some time, in one case the effect of a single momentary prick with the algometer needle lasting for as long as 77 minutes. In the paper the variations in behavior of the pain in different cases are described in some detail, and description is given of numerous experiments carried out on the author himself, his medical assistants, and some nurses. For the sensibility tests he employed (a) the Alrutz algometer test set at I or IV; (b) a glass rod with bulbous extremity of about 1.5 mm. diameter; (c) a fine thread dipped in glacial acetic acid. The method of conducting experiments is given, and several are recorded in detail, after which the explanation of the phenomena is discussed. The author concludes by saying that the majority of the peculiarities which characterize the sense of pain in the irradiated area exist in miniature even in normal sense of pain, and therefore that further investigation of ultra-violet hyperesthesia might well increase our knowledge of the physiology of pain itself. The paper is suggestive and the work should be continued, with, as the author says, histological examination of irradiated areas, even commencing in the latent period of the erythema, though the latter would call for particularly good technique.

W. S. LAZARUS-BARLOW.

Ciotola, E. RHINORRHEA AND EPIPHORA. [Rev. Psi. y Dis., Conexas, Vol. V, No. 1.]

Ciotola treats with atropin the sequence: chilling, overstimulation of the sympathetic, inviting infection, and the resulting reflex rhinorrhea and epiphora. It is futile to treat the centrifugal elements alone and leave the centripetal and the medullary factors unmodified.

Baagöe, K. BESNIER'S PRURIGO IN ASSOCIATION WITH ASTHMA. [Uge. f. Laeger, Vol. 86, Aug. 14.]

The author draws attention to the frequency with which Besnier's prurigo occurs among young persons suffering from asthma. Among 67 asthmatics under the age of twenty, he found Besnier's prurigo in 13; in another case of Besnier's prurigo the brother of the patient suffered from asthma, and in yet another case of prurigo the patient's father was an asthmatic. These cases of prurigo were tested for anaphylaxis by skin reactions to such substances as pollen, feathers, hairs, and horse dandruff, and in every case a positive reaction was obtained to one or more of these substances. The author believes that the association of Besnier's prurigo with asthma is not a coincidence and accidental, but that the two manifestations come from one and the same cause. The relation of these two diseases to each other has hitherto been overlooked largely because Besnier's prurigo tends to disappear automatically after childhood.

Pires de Lima, J. A. CONGENITAL FAMILIAL ATROPHY OF NAILS. [Ann. de Dermat. et Syph., Vol. V, Med. Sc.]

The author describes a family in which congenital atrophy of the nails was found in all the females. A healthy mother had seven sons whose nails were healthy, and twin daughters both with atrophic nails. One of these married and had two daughters and a son by one husband, and subsequently one daughter by another man. All three girls had a number of atrophic nails on the hands and feet, while the son had healthy nails. All these people were otherwise apparently healthy and intelligent, and showed no stigmata of degeneration apart from their nails. The article is illustrated by three photographs and a family tree, and there are six references to the literature of the subject.

Pierce, Lydia B. PELLAGRA: REPORT OF A CASE. [Am. Jl. Psych., Oct. Vol. IV.]

The writer reports a case of pellagra in which a study of the histopathology of the central nervous system was made. The patient exhibited symptoms of the type of mental disorder which is commonly associated with the disease, and the picture was not complicated by the presence of any other psychosis. The history of the case is reviewed—and the results of a microscopic study of the brain and spinal cord are described. There were—moderate changes in the pia matter and the blood vessels.

showed some degree of thickening with proliferation of the fibroblasts. The most striking change in the cerebral cortex was a gliosis, associated with a diminution in the number of ganglion cells, which occurred in focal areas that were irregularly distributed. Many of the ganglion cells were well preserved but some showed evidence of degeneration. The greatest damage to the cellular elements was found in the Betz cells, and in the cells of the anterior and posterior columns of the spinal cord and in those of Clark's column. These were swollen and showed chromatolysis with complete loss of the tigroid substance, and displacement of the nucleus to the circumference of the cell. The findings in this case resemble the type of reaction described by Meyer in his cases of central neuritis, and found by Spiller and by Singer and Pollock in their cases of pellagra. They seem to be typical of the change produced when injury to the axis cylinder has taken place at some distance from the central neurone, and was thought by the above writers to be due to a systemic toxemia in these cases. No specific lesions which could be considered peculiar to pellagra were found. [Author's abstract.]

Head, G. D. A CASE OF PELLAGRA. ITS BEARING ON THE ETIOLOGY AND CURE OF THE DISEASE. [Arch. Int. Med., Vol. XXXIV, p. 93, Med. Sc.]

From a brief review of the available evidence the author concludes in the introduction that both vitamin deficiencies and infection must be excluded as etiological factors in pellagra. They must be sought for in a deficiency either of specific proteins, i.e., specific amino acids, or of certain inorganic salts. He records a case which very strongly supports the theory of a specific protein deficiency. A woman of fifty who had previously been in good health, developed pellagra after having lived for two years on a diet almost free from meat. She had adopted this diet because she had had all her teeth extracted, and, being unable to get a good-fitting plate, she had to live on "mushy" foods (milk, toast, creamed wheat, potatoes, cabbage, carrots, bread and butter, cream, cooked fruits, grape fruit, soft puddings). This dietary contained plenty of vitamins. All her symptoms disappeared in two months when she was placed on a liberal meat diet and she was dismissed cured. She also received intravenous injections of sodium cacodylate. The case is of interest because it has been shown, in an experiment in man, that out of 11 men placed on a diet from which fresh meat, eggs, and milk were excluded six developed pellagra, and the case is the first one reported from an area which is supposed to be nonpellagrous.

Rowe, A. W., and McCrudden, F. H. METABOLISM IN SCLERODERMA. [Bost. Med. & Surg. J., Vol. CLXC, No. 4, p. 121.]

The early signs in this patient studied were stiffness of the right elbow, followed by temporary swelling. The knees, then the shoulders, and then the hips and spine became swollen and stiff. The skin of

the forearms and hands became scaly several months later, and thick, stiff, smooth and shiny. The scleroderma gradually extended over more than half of the body. At the beginning, roentgenographic examination revealed no articular changes, although the joints were sensitive on motion, and later became rigid, due to the thickening of the skin. The muscles were atrophied. Roentgenographic examination later revealed atrophic changes in the bones and joints. The basal metabolism test yielded 1,584 calories, or from + 4 per cent to + 19 per cent, according to the standard employed. The vital capacity was 1,900 c.c., which is about 50 per cent below the calculated standard. When the central nervous mechanism maintaining normal pressure and activity is injured, osseous adaptation is impaired; this is the case in tabes (Charcot joints), in syringomyelia, cerebral palsies, and poliomyelitis. Muscular changes are associated with osteomalacia. Trophic changes in the skin and nails occur in nervous disease, such as tabes, peripheral and central palsy. Conditions resembling scleroderma occur in cases of peripheral nerve palsies of long standing hemiplegia, in progressive facial hemiatrophy, primary progressive atrophic arthritis, and in certain forms of myositis.

Foix, Ch., and Nicolesco, I. ALTERATIONS OF THE NERVOUS SYSTEM IN MYOPATHY. [C. R. Soc. de Biol., Vol. XC, No. 5.]

In two cases of facio-scapulo-humoral myopathy these observers detail alterations occurring (1) in the pontobulbar and spinal motor nuclei of the affected muscles and (2) in the diverse formations of the pathways related to the extrapyramidal and vegetative systems. The alterations in this latter group of systems are particularly interesting and are related to alterations particularly of the (1) globus pallidus, (2) of cellular groups with black pigment of the bulbo-ponto-peduncular paths and (3) certain infundibulo hypothalamic formations of the substantia innominata of Reichert; of the cells of the reticular formation without pigment to the vesicular cells and finally to the dentate nucleus of the cerebellum. In their totality the distribution of the lesions is quite similar to that observed by these authors in Thomsen's disease [see *Comptes Rendues*, XCIX, 1923, p. 1095—Abst., J. N. & M. D., 1925]. The ensemble of these lesions is of particular moment in that there seems to be established a rapport between the muscular atrophy, the myotonic signs, the glandular and psychical symptoms which are far from being rare in the course of the myopathies. [Mourgue.]

Hunter, J. I. SIGNIFICANCE OF DOUBLE INNERVATION OF VOLUNTARY MUSCLE. [Med. Jl. Australia, June 14, 1924. J. A. M. A.]

Hunter reviews researches made on the innervation of voluntary muscle, the significance of the presence of two types of motor nerve endings in voluntary muscle, the ordinary motor endplates of a medullated fiber and the terminaisons en grappes which are always associated with a nonmedullated fiber. Experimental investigation has proved that the sig-

nificance of the difference in structure of the two kinds of fibers and of their end-plates, is that the medullated fibers are cerebrospinal fibers. The medullated fibers and their end-plates degenerate after section, leaving the nonmedullated fibers and their terminations intact; on the other hand, the medullated fibers are unharmed while the nonmedullated fibers disappear on removal of the sympathetic ganglia. Then, too, organs exhibit certain postural activities, the result of compensatory muscle action. This activity attains its full development when the muscle is under the influence of its nerve supply. Removal of the sympathetic nerve supply to voluntary muscle abolishes plastic tonus. This occurs in normal, spinal and decerebrate animals. Hence, it can be deduced that the function of the sympathetic innervation of voluntary muscle is to maintain posture once assumed by fixing the muscle fibers at their new length. In this way it is responsible for the lengthening and shortening reactions. Compared with tetanic contraction the maintenance of posture by the sympathetic system, as in natural attitudes of the animal, involves a low expenditure of chemical energy and obvious fatigue is not developed for long periods of time. The cerebrospinal connection of voluntary muscle imposes a posture on the muscle reflexly or by voluntary activity and the sympathetic innervation subserves the function of maintenance of posture. Hunter maintains that, in part, the process of deafferentation consists of severing the afferent limb of a sympathetic arc and that the efferent limb of this arc is made up of the postganglionic nonmedullated nerve fibers supplying voluntary muscle, for plastic tonus also disappears when ramisection is performed. The deafferented specimen differs from the muscle following sympathetic ramisection in that the knee jerk is absent in the former condition, while it is present, though less exaggerated and without the shortening reaction in the latter. In other words, the jerk element remains after sympathectomy, but disappears when the posterior nerve roots are severed. In decerebrate rigidity both these reflex arcs are released from control. Royle's experiments are the first to show consistent loss of plastic tone in decerebrate rigidity.

Favill, John, and Rennick, Charles F. A CASE OF FAMILY PERIODIC PARALYSIS. [*Am. Arch. Neurol. & Psychiat.*, Vol. XI, pp. 674-679.]

The authors present a study of this interesting disorder occurring in one of them (C. F. R.). A medical student, aged twenty-three, had had since twelve years of age occasional attacks of paralysis of various muscle groups. "Toe-drop" or "heel-drop" would develop in one or the other leg and last for hours or days. At other times a part of one arm would be the only area affected. Paralysis of the extensors of the middle finger of the right hand was the only feature of some attacks. A study of the family history revealed similar attacks in the father, one paternal aunt, the paternal grandmother, and one cousin of the father's. There were suspicious histories in two other members of the family. General and neurological examination of the patient was essentially negative.

Opportunity came for electrical examination during an attack of flaccid weakness of the right foot. Faradic stimulation brought no response. Studies of urine and blood revealed no important abnormality other than a slightly high blood sugar. Epinephrin injections failed to produce an attack. Attention is drawn to the fact that most accounts of the disease describe a complete paralysis of all four extremities. Holtzapple however is quoted as describing in 1905 cases similar to this one. No new conclusions as to pathogenesis are drawn but the case is presented to call further attention to the existence of a very mild form of family periodic paralysis. [Author's abstract.]

Newton, F. C. SYMPATHETIC INNERVATION AND HEAT PRODUCTION IN SKELETAL MUSCLES. [Am. JI. of Phys., Vol. 67. Dec.]

This experimental study on rabbits was designed to study the relationship of sympathetic innervation to heat production. The lumbar and pelvic sympathetic chain on one side in the rabbit was extirpated. The pyramidal motor system was intact. This resulted in no observable influence on either the motility or tonus of the muscles on the side of operation; and puncture of the thermal center in the corpus striatum led to a rise of temperature observed in the rectum and in both extremities, without showing a larger or more rapid rise on the normal side, if anything a somewhat greater rise in some cases on the side without sympathetic innervation. These facts might be interpreted that sympathetic innervation has no observable influence on heat production in skeletal muscles.

Pereira, J. R. AUTOMATIC CONTRACTION OF STRIATED MUSCLE IN MAN. [Jl. de Physiol. et de path. gen., Vol. XXIII, No. 1.]

This study concerns itself with the interpretation of Kohnstamm's (1915) catatonic experiments. If one brings about a strong contraction of the deltoid at the same time preventing the elevation of the arm, holding it against a wall, a door, or against the edge of a table, thus producing an isometric contraction lasting a minute or so, and then releasing the arm taking care not to aid it by any voluntary movement, one notes that the arm automatically raises itself almost to a horizontal position and then slowly drops. In studying this movement by the string galvanometer the author concludes that the automatic contraction of the deltoid is of purely muscular action and takes place independently of the nervous system. [Mourgue.]

Roch, M., and Katzenelbogen, S. ANTI-SPASMODIC TREATMENT OF INVOLUNTARY MUSCLE. [Rev. Méd. Suisse Rom., XLIII, Dec.]

Inhibitory action on unstriated muscle fiber results from administration of benzyl bonzoate and monobenzyl amide of phthalic acid by virtue of the benzyl radicle contained. Since benzyl benzoate is different to administer, they utilize the calcium salt akineton in 50 cg. tablets four or five

times a day by the mouth, and the sodium salt in 25 per cent solution hypodermically. The pharmacological action is similar to that of papaverine—namely, inhibition of peristalsis, diminution of tonus, and relaxation of spasm of unstriated muscle fiber. The action is upon the muscle cells directly, and not upon the peripheral nerve terminations. Fall of blood pressure occurs with dilatation of the peripheral blood vessels, but there is no appreciable action on central synapses of the heart, respiration, or kidneys. Benzyl benzoate in doses of 20 to 30 drops has been used in a variety of diseases, all of which, however, had this point in common—that there was an exaggerated contraction and spasm of unstriated muscle. Spasm of the intestine, of the biliary ducts, bladder, urethra, sphincters, angiospasm, dysmenorrhea, bronchial asthma, and whooping cough in children, who tolerate the drug well, have been relieved by it. In cases with high blood pressure considerable improvement of headache, vertigo, and nervous crises, has been observed. The authors report favorable results in three groups of cases: (1) Affections of the alimentary tract, such as cardiospasm, dysphagia with aphonia, nervous dyspepsia associated with a sensation of weight and cramp in the epigastrium after food, dyspepsia with abdominal pain, and pyloric spasm with no organic lesion. (2) Asthma, formication, and intermittent claudication of the lower limbs. (3) Cases of high blood pressure. In cases of chronic nephritis with high tension no results were obtained; in arteriosclerosis without renal disease the blood pressure was reducible, but the best results were obtained in cases of angiospasm.

Ganter, G. INFLUENCING SMOOTH MUSCLES. [Deut. med. Woch., Dec. 12, Vol. 50. J. A. M. A.]

Ganter believes that direct changes of the tonus of smooth muscles (apotonia and anatonía) are frequent, while the corresponding pure nervous changes of the tonus (vagotonia and sympathicotonia) are rare. Since the tonus of the intestinal muscle is increased by the vagus, which decreases the tonus of blood vessels (and vice versa with the sympathetic), it is impossible to explain the increased tonus of both by morphin by an action on the nerves. In a similar way, the lowering of the tonus of both intestine and artery by senna or strophanthin can also be explained only by a direct action on the smooth muscle. He believes that this theory has important therapeutic consequences.

Lundberg. EFFECT OF HYDRASTININE ON SMOOTH MUSCLES. [C. R. Soc. Biol., Vol. 73, March. 7.]

Hydrastinine, much in vogue in the United States among the earlier gynecologists has been studied anew by Lundberg especially with reference to its action upon the vegetative system. He finds that in the intestine, also in the uterus and heart of rabbits, the use of hydrastinine results in a paretic action on the parasympathetic and sympathetic nerve terminals.

Bailey, P. A CASE OF MYOKYMIA. [*Revue Neurologique*, An. 32, T. No. 1, p. 41, Jan.]

Report of a case of unknown origin in a woman of thirty-seven. The movements were confined to the left thigh which was three cm. larger in circumference than the right. On occasion the myokymic movements turned into a myoclonia. These two forms of abnormal muscle movement are, very likely, the result of the same changes in the neuromuscular complex. [CAMP, Ann Arbor.]

Yoshimura, Kisaku. EXPERIMENTAL STUDIES ON THE NATURE OF PERIODIC PARALYSIS OF THE LIMBS. [*Progres. Méd.*, Vol. 39, Oct.]

The author discovered that in periodic paralysis, surplus supply of carbohydrates played an important rôle. After further study he found that magnesium salts were present in an abnormally large amount, the ratio between this metal and calcium was markedly changed, and later he learned that the paralysis could be the result of the poisonous effects of the magnesium ions, while carbohydrates played a part as the accelerating agency for this disproportionally large magnesium content of the blood.

Hunter, J. I. POSTURAL INFLUENCE OF SYMPATHETIC NERVOUS SYSTEM. [*Brain*, Vol. 47, Aug.]

This author has amplified experimentally the earlier work of Giovanni, Gaskell, Pende and others and shows that if the phenomena connected with the vegetative innervation of voluntary muscles, blood vessels, including capillaries, and hollow viscera, be synthetically reviewed, the general conclusion is arrived at that in each of these systems the vegetative system is continuously active. It produces plastic tonus which is subject to modification by the cerebrospinal system in the voluntary muscle systems. Artery, arteriole, capillary and venule constriction is brought about by the same influence and may be inhibited by vasodilators. The tone of the hollow viscera is maintained to accommodate the contents within them and sphincters are contracted by the sympathetic innervation. The parasympathetics intermittently stimulate the muscle of the wall and relax the sphincter. In each case the sympathetic system imposes a "posture," in the sense of that word employed by Sherrington, on the structures innervated by it.

Harttung. MUSCULAR ATROPHY AFTER RESECTION OF SYMPATHETIC NERVE. [*Zent. f. Chir.*, Vol. 51, Oct. 18.]

Resection of the sympathetic nerve after the Kümmell method was practised by this observer for the treatment of a man, aged thirty-seven, with bronchial asthma. He had had asthmatic attacks for eleven years, which were becoming more and more severe and prolonged, and had produced a highly nervous state. All sorts of drugs and remedies had been tried but only large doses of epinephrin brought relief, and this was slow and was for only a brief period. The operation was well borne

and the asthmatic attacks became milder and after two months ceased. A few days after the operation, however, the patient noted a feeling of weakness in the left arm. This became worse and not only all the motions of the arm but also of the left shoulder required increased effort. Muscular atrophy developed in the shoulder and left arm later, also in the adjoining thoracic muscles which a few months later began to disappear.

Brüning, F. ABDOMINAL PAIN. [Klin. Woch., Vol. III, April 22.]

Brüning here states that the pain in abdominal affections is localized deep in the epigastrium and not in the skin. Hence Head and Mackenzie's findings must be carefully differentiated. Its site corresponds to the celiac plexus. When the parietal peritoneum is affected, accurate localization of the pain is alone possible. The upper spinal segments innervating the parietal peritoneum are in the thoracic cord. The frequent abdominal pain in pneumonia in children which has led to many harmful laparotomies is thus understandable. The pain from distention of the bowel is usually localized correctly because of the mechanical irritation of the parietal peritoneum. He mentions Læwen's diagnostically valuable investigations with paravertebral injections of procain: Pains originating in the duodenum and pyloric region disappear after infiltration of the sixth to the eighth dorsal segment on the right side. Affections of the lesser curvature require supplementary injections on the left side. The gallbladder, the bile duct and probably the liver become painless after anesthetizing the right ninth to eleventh thoracic nerves.

Deutsch, G. THYROID AND MOTILITY OF INTESTINES. [Deut. Arch. f. klin. Med., CL, March 30.]

Obstipation in cases of hypothyroidism is here discussed. The colon is chiefly at fault. One patient had three cycles of obesity with constipation, recurring in winter. Thyroid treatment ameliorated both conditions. Thyroid preparations increased the tonus of the intestinal muscles and lowered the threshold for stimulation of peristalsis.

Loeper, M., and Turpin, R. LESIONS OF GASTRIC NERVES. [Progres Méd., XXXVIII, Dec. 5.]

A microscopical study of the lesions of gastric nerves in various diseases of the stomach. Changes in the nerves in cases of callous ulcers are extensive and are correlatable with pain. Cancer cells can propagate in the lymphatic spaces around the nerves. Some products of abnormal fermentation in cases of stenosis of the pylorus can penetrate along the nerves. Formaldehyd and chloroform, which may be present in such cases, can be found in the pneumogastric nerve and even in the medulla oblongata. Resection of gastric nerves has given good results.

Cross, D. G. T. K. PHYSOSTIGMIN AND PITUITARY EXTRACT ON ISOLATED HUMAN VERMIFORM APPENDIX. [Brit. Med. Jl., Jan. 5, 1924.]

Experiments on the isolated human appendix have shown that physostigmin and pituitary extract in combination have a more powerful effect in stimulating movements of the intestine than either of these agents singly. A number of cases of severe post-operative atony are described by Cross in which this combination relieved the condition when physostigmin or pituitary extract alone failed to do so. So far no case thus treated has failed unless where there was unsuspected mechanical obstruction.

Redlin, G. FATE OF CHILDREN WITH PYLOROSPASM. [Deutsche med. Woch., XLIX, March 30.]

Nineteen cases of pylorospasm are here studied. Three of the children died. The prognosis in those who overcame the spasm is favorable. Nervous symptoms are so striking that he would emphasize the importance of affective factors in their causation. He calls these unconscious affective factors (unrecognized as such) by the meaningless phrase "neuropathic diathesis."

Carlson, A. J., and Litt, P. REFLEX CONTROL OF PYLORUS. [Arch. Int. Med., XXXIV, March. J. A. M. A.]

A new method of accurate and continuous recording of the tonus and contractions of the pylorus is described by Carlson and Litt, a method that seems to involve the minimum of local trauma consistent with accurate graphic recording. As a working hypothesis, the view is advanced that the action of vegetative nervous system efferents (sympathetic and autonomic), at least on some of the motor mechanisms, are association or reflex responses and not simple peripheral responses like that of the skeletal muscles on stimulation of the pyramidal tract. That is, the visceral efferents are in reality afferents to local but diffuse reflex mechanism in the viscera. The prevailing view of simple antagonistic action of the vagus and the sympathetic systems is not tenable for the cardia, the stomach and the pylorus. Motor or inhibitory effects on these regions of the intestine are produced by both the vagi and the splanchnic systems, the character of the peripheral response depending on the initial physiologic state of the peripheral motor mechanism, analogous to the so-called "postural reflexes" of the spinal-skeletal system.

Tournade et al. SUPRARENAL HORMONE AND THE INTESTINES. [Comptes Ren. Soc. Biol., 92, Feb. 29.]

Tournade and his co-workers conclude from their experiments on dogs and cats that in a healthy animal intestinal inhibition is caused through excitation of the splanchnics by both a nervous and a suprarenal mechanism.

Deutsch, G. THYROID AND RECTAL MOVEMENT. CLINICAL AND EXPERIMENTAL OBSERVATIONS WITH 18 ILLUSTRATIONS. [D. Arch. f. kl. Med., Vol. DXLII, Nos. 1, 2.]

Myxedema is distinguished, as the author points out, by a distinct lowering of the tonus of the vegetative nervous system in contradistinction to Basedowian disease which reveals increased stimulability of the vegetative nervous system in part in its sympathetic, in part in its autonomic division. Myxedema shows not only bradycardia, lowering of blood pressure nad anhidrosis but also atony of the stomach and an atony of the rectum resulting almost always in an often serious constipation. A pronounced myxedema or a mild hypothyroidism reveals this almost constant symptom of constipation which is often the controlling feature of the clinical picture. The fact that this is almost always overcome in a short time by thyroidin emphasizes the necessity for considering the hormonal functional disturbance in all cases of habitual constipation. For the stimulability of the vegetative nervous system is regulated in Auerbach's plexus no less than elsewhere by hormones arising in the organism. The point of attack, for example, of thyroglandol, which is used to advantage in constipation, lies beyond the vagus nerve endings in the nervous centers of the rectal wall. The stimulus to peristalsis arises from the fulness of the rectum and the stretching of the wall which results. Thyroglandol assists peristalsis through increase of the tonus of the longitudinal and circular musculature while at the same time it lowers their threshold value. This tonus increase by thyroglandol also by thyrodopton in intravenous injection has been observed in animals through Katsch's abdominal window and in the large intestine of man behind the roentgen screen. Experiment has not yet proved the effect of the physiological secretion of the thyroid upon rectal activity in spite of the clinical control of thyrogenic constipation. Thyroxin, the effective substance of the gland apparently has no effect upon the rectum but it perhaps undergoes changes in the blood, thus becoming effective. Deutsch suggests hypothetically that this change is the throwing off of the carboxyl group from the compound which constitutes thyroxin (trihydro-triiodoxy-B- indolpropionic acid), and transformation into proteinogenic amin.

Kirschbaum, W. ANIMAL EXPERIMENTATION CONCERNING THE INFLUENCE OF SEVERE INJURIES TO THE LIVER UPON THE CENTRAL NERVOUS SYSTEM. [Ztschr. f. Nervhkl., Vol. LXXVII, Nos. 1-6.]

Kirschbaum reports severe degenerative affection of the brain of a dog which died as a result of ligature of the gall duct and of the arteries of the liver, as in the case of Eck's fistula dog. Progressive neuroglia reactions occurred in different ways in animals poisoned by guanidin and phosphorus. In every case the brain cortex was chiefly affected while

it could not be demonstrated that the striatum or the globus pallidus was affected alone or predominantly.

Crile, G. W., Rowland, A. F., and Wallace, S. W. EFFECTS OF DRUGS ON TEMPERATURE OF BRAIN AND LIVER. [Jl. of Pharm. and Ex. Ther., XXVI, July. J. A. M. A.]

It is assumed that the effect of the injection of epinephrin on the temperature of the brain in normal animals can be used as a unit of measurement whereby to estimate the effect of an agent on the oxidative power of the brain. From the experiments reported by Crile, Rowland and Wallace it would appear that the alteration in the temperature of the brain following the injection of epinephrin is not notably affected by the effect of the agent on the blood supply of the brain. The following observations are of especial significance: (a) When epinephrin is injected in the presence of morphin, the temperature response of the brain is diminished in direct relation to the depth of narcosis. (b) The injection of epinephrin in the presence of strychnin produces not only a characteristic rise in the temperature of the brain, but also a marked decrease in the temperature of the liver. (c) Alcohol of itself alone produces a fall in temperature corresponding to that observed in rabbits in shock; while in temperature. This rise is followed by a fall which exceeds that observed in normal rabbits.

Leyser, E. CLINICAL OBSERVATIONS REGARDING THE RÔLE OF THE LIVER IN MENTAL AND NERVOUS DISEASES. [Arch. f. Psych. u. Nervkr., Vol. LXVIII, Nos. 1, 2.]

The liver usually plays a secondary part in nervous and mental diseases. Delirium tremens is an instance probably of a primary rôle. Its secondary involvement is due to functional disturbances because definite vegetative centers are affected. Here functional tests can be made only negatively. In the third place disorders of the liver are coördinated with disorders of the central nervous system. Leyser describes a case of this sort. Probably in Wilson's disease there is such a coördination of disorders.

Legueu, F., and Flandrin, P. DENERVATION OF THE KIDNEY. [Presse Méd., Aug. 29, XXXI. J. A. M. A.]

Legueu and Flandrin have severed the nerves in the pedicle of one kidney in two men and six women to relieve nephralgia with hematuria or hydronephrosis, not severe enough to justify nephrectomy but so extremely painful that something had to be done. The pains vanished at once and permanently. One woman who had been completely crippled by the pain, and had been contemplating suicide, was completely transformed by the operation. Their clinical experience thus sustains the

physiologic and the surgical bases and the practical utility of tearing out the nerves in the pedicle of the kidney. They left a few nerve fibers intact in the pedicle, and one patient returned several months later to have the other kidney treated in the same way. This was done, and with equal success.

Ellis, A. W. M., and Marrack, J. R. RENAL FUNCTION IN PATIENTS WITH RETINITIS AND HIGH BLOOD PRESSURE. [Lancet, May 5, 1923. J. A. M. A.]

An analysis of nineteen cases of retinitis associated with high blood pressure and renal disease was made by Ellis and Marrack. In this series of cases, nine were patients with chronic interstitial nephritis, and ten were patients with hyperpiesis. The cases suggest that hyperpiesis is a more common cause of retinitis than chronic interstitial nephritis. The authors believe that hyperpiesis is the more common disease of the two. Whether the cause of retinitis is the same in both conditions and what is its nature they are unable to say. The only common factor in the two conditions would appear to be the high blood pressure. All of the first group died and five of the second group died.

Pototzky, C. DIFFERENTIATION OF ENURESIS TYPES. [Zeit. für Kind., Vol. XXXVIII. J. A. M. A.]

Pototzky classifies enuresis in three types: the hyperexcitable or neuro-pathic; the hypobulic or psychopathic, and the intellectually and emotionally moron type. This differentiation is important because it affords directions for prognosis and treatment. While the first type has to be managed with sedatives, or, in case of abnormal depth of sleep, with camphor, the second type can be approached best by proper suggestive therapy. The treatment of the third type is mainly endocrine and educational.

II. SENSORI-MOTOR NEUROLOGY.

6. ENCEPHALITIS.

Bergman, E. EPIDEMIC ENCEPHALITIS IN SWEDEN. [Hygiea, July 15, 1924.]

This extensive summary reports that in Sweden since 1921 about 2,500 cases of epidemic encephalitis have already been notified, more than half of which occurred in 1921. January, 1921, marked the culmination of the epidemic, and there were as many as 520 new cases in this month. In 1923 about 500 cases were notified. The author contributes an intensive study of 67 cases in Upsala. In about 50 per cent of these the onset of the disease was marked by vague febrile symptoms. In no case was its onset insidious, and only in two cases were there general symptoms without fever at the onset. In as many as 18 cases lethargy

and paralyses of the ocular muscles occurred at the beginning of the disease. The cranial nerves and ocular muscles were affected in 85 per cent, and in most of these cases the lesions of the cranial nerves began very early. Indeed, in some cases the disease was first detected when the patient went to an eye hospital on account of diplopia. Most of the facial paralyses passed off rapidly. The amyostatic symptom-complex, or Parkinsonism, was observed in as many as 29 cases. Ten cases terminated fatally, and only 15 of the 67 patients were cured completely, though another 10 patients recovered sufficiently to resume full work. The prognosis was worse and the mortality higher for the hyperkinetic than for the lethargic cases. It was often noticed that neurasthenic and psychasthenic conditions developed as sequels, and either insomnia or persistent drowsiness continued long after the onset of the disease. The author expresses considerable pessimism with regard to the various methods of treatment tried.

Stern, F. TREATMENT OF EPIDEMIC ENCEPHALITIS. [Med. Klinik, July 27, XX. J. A. M. A.]

Stern injects from 50 to 80 c.c. or more of convalescents' serum intramuscularly in encephalitis. Of the twenty-seven patients in the acute or subacute stage who were thus treated, one died. None of them had any sequelae which occur otherwise in 40 per cent of patients. The amelioration was extremely rapid in some cases. Nonspecific serum has some results. He classes Rosenow's serum in the latter group. Chronic cases may be treated with large doses of arsenic, milk injections and scopolamin and atropin.

Roch, M., and Katzenelbogen, S. TREATMENT OF CHRONIC EPIDEMIC ENCEPHALITIS. [Schweiz. med. Woch., LIV, Sept. 11.]

Five cases of chronic epidemic encephalitis treated by intraspinal injections of casein are here discussed. A 10 per cent solution was used, of which $\frac{1}{2}$ c.cm. (0.05 gram of casein) was added to 10 c.cm. of normal saline. The mixture, still further diluted by part of the cerebrospinal fluid withdrawn by lumbar puncture, was slowly injected into the spinal canal. The injection produced a meningeal reaction, which might be severe but was always transient, in the form of fever, headache, nuchal rigidity, and Kernig's sign, lasting from twenty-four to forty-eight hours. The intensity of the reaction, which was of the nature of an aseptic meningitis, depended as much (or even more) on the susceptibility of the individual as on the dose of the casein. It is always advisable to start with a small dose, such as $\frac{1}{2}$ mg., which may be increased in subsequent injections if the reaction produced is too slight. All the five cases, of which four were kept under observation more than five months, derived benefit from the treatment. Unlike Netter and Guillain, the authors are of opinion that the meningeal

reaction caused by the intraspinal injection is beneficial, and consider that a certain proportion of the good results obtained by the vaccine virus employed by Marie and Poincloux in the treatment of epidemic encephalitis is due to this reaction.

Stallybrass, C. O., and McNeil, A. S. MULTIPLE ABORTIVE CASES OF ENCEPHALITIS LETHARGICA. [Lancet, 1924, II, 271. Med. Sc.]

Abortive and ambulatory cases of encephalitis lethargica occurring amongst individuals closely associated with well-marked cases have been reported, but it is suggested that such cases are more common than is usually supposed, for, when they are mild, a diagnosis of influenza is made and medical attention is not sought. During the prevalence of encephalitis in Lancashire last spring inquiries were made as to recent illnesses of other inmates of houses where cases had been notified, and four households were found in which from one to three other persons had recently had symptoms strongly suggestive of mild encephalitis. In nearly all these persons definite nystagmus was found; the symptoms most often mentioned were, drowsiness, nocturnal restlessness, or delirium, headache, disturbances of vision, and diarrhea. Post-encephalitic conditions may follow cases so mild as to be undiagnosed at the time; great importance is attached to nystagmus in the diagnosis of such cases.

Smith, E. C. POSTMORTEM REPORT ON LETHARGIC ENCEPHALITIS. [Irish Jl. Med. Sci., Sept., 1924.]

A complete pathological report of a case in which the kidney, heart, spleen and liver all showed such changes as to point to a diffusely acting toxin as the causative factor. Some relation between the pulmonary condition and the encephalitis may exist and possibly the virus finds entrance through the bronchial mucous membrane. Hemorrhages were noted in the conduction fibers of the heart.

Stieffler, G. THE CONTAGIOUSNESS OF LETHARGIC ENCEPHALITIS. [Wien. klin. Woch., LXXIV, Aug. 28.]

An epidemiological study of twelve cases in which transmission could be more or less clearly followed. In six infection by direct contact was probable. In three cases there was a familial or house infection. In five cases there was probably indirect contagion through a healthy third person, and in one case it was uncertain whether the contagion occurred directly or indirectly. The incubation period in the six cases of direct contagion ranged between six and twenty-one days. Of the infecting cases eight were in the acute stage and four were in the late stage, including three in which an acute exacerbation occurred. Those who deny the possibility of transmission of lethargic encephalitis may be reminded of the epidemiology of acute poliomyelitis, which for a long time was not regarded as contagious until it was at last proved to be

so, mainly owing to the investigations of Ivar Wickman. In view of the contagiousness of lethargic encephalitis isolation should be carried out as early as possible, both in acute cases and in chronic cases during a relapse.

Mann, L. TREATMENT OF ENCEPHALITIS. [Deutsche med. Woch., Aug. 29, L.]

This report boosts the action of acriflavin. He also claims good results with colloidal silver but his critical acumen seems questionable.

Doerr, R., u. Zdansky, E. ETIOLOGICAL RESEARCH ON HERPES AND ENCEPHALITIS. [Ztschr. f. Hyg. u. Infektionskrankh., CII, 1. Med. Sc.]

A long paper in which the published facts of research in encephalitis are subjected to rigorous criticism. It is pointed out that the viruses raised from cases of encephalitis and continued by passage differ quantitatively and also qualitatively. The authors consider that three of the viruses are specifically distinct, viz.: (1) the herpes strains raised by Levaditi, Doerr and Schnabel, Doerr and Berger, and Lauda and Luger; (2) the virus of Kling, David, and Liljenquist; and (3) the strain of Koritschoner. As a result of comparative experiments the authors consider that the herpes strains alone can be regarded as descendants of the encephalitis virus. They failed to obtain herpes virus from the brain or c.s.f. of individuals not suffering from encephalitis. The question whether encephalitis is necessarily due to a living virus is discussed and the facts which point to the development of encephalitis lesions from the injection of material which is without doubt not organized is fully discussed.

Guillain, G., Alajouanine, Th., and Celisse. THE CONTAGION OF EPIDEMIC ENCEPHALITIS IN ITS PARKINSONIAN PHASE. [L'Encéphale, XIX, p. 533.]

The writers have drawn attention at the 1924 Congress of French Alienists and Neurologists to the fact that encephalitis should be regarded as contagious, not only in its first acute period, but also in its Parkinsonian phase; the Parkinsonian syndrome is likewise a consequence of lesions in evolution and not of old lesions. They have observed a case of a youth, the subject of an old poliomyelitis of childhood, who was in a hospital ward between two Parkinsonians; he became attacked by a typical lethargic encephalitis; he was in constant contact with these two Parkinsonians. There can be no doubt that the contagion occurs by contact, and it appears probable that the virus of encephalitis can exist in the excessive salivation of Parkinsonians. It is desirable that post-encephalitic Parkinsonians should be isolated from other hospital cases, and the notion of the contagiousness of post-encephalitic Parkinsonism

should be made known to families so that practical preventive measures should be taken. [Leonard J. Kidd, London.]

Levaditi, C. ENCEPHALITIS AND HERPES. [Paris Méd., LVII, Jan. 31.]

This author again repeats his former viewpoint and points out that the specific filtrable virus causing different syndromes of herpes remains in the saliva and nasopharynx of most subjects without producing any disturbances. The virulence may be increased by unknown factors, and if the virus passes then through an inflamed nasopharyngeal mucosa, it invades the central nervous system. The epitheliotropic virus becomes a neurotropic. He concludes that the saliva virus, the virus of herpes, and the encephalitis virus are variants of the same ultravirus.

Paulian, D. POST-ENCEPHALITIC PARKINSONISM. [Bull. Mém. Soc. Méd. Hôp., Paris, Feb. 12, 1925.]

This study develops the exaggerated notion that from a therapeutic viewpoint two forms of post-encephalitic Parkinsonism can be distinguished. Immobility and rigidity predominate in the first type, while excitomotor symptoms in addition to rigidity are present in the second. [Nothing is said of the intermediaries, which are in the majority, or those passing from one to another. Ed.] Treatment by spinal autoerotherapy has a favorable and even curative influence on the first group, while it has little or no effect on the second. The treatment consists in removing aseptically 40 to 50 c.c. of blood by venepuncture, collecting the serum in sterile tubes, inactivating it by a temperature of 56° C., and injecting 10 to 15 c.c. intraspinally after removing an equal quantity of cerebrospinal fluid. After the injection the patient should remain in the recumbent position for twenty-four hours without a pillow. An injection is made weekly, and three or four are sufficient. Improvement sometimes occurs after the first injection, the earliest favorable sign being the appearance of automatic movements of the arm and trunk in walking. The patients gradually train themselves, become able to run, and salivation diminishes. Of 21 patients treated by this method 5 made a complete recovery, 13 showed a decided improvement, and 3 were failures, but these did not complete the full treatment. No local or general reaction should follow the injection when it is skilfully performed under aseptic conditions.

Gordon, M. B. ACUTE HEMORRHAGIC NEPHRITIS AND ACUTE HEMORRHAGIC ENCEPHALITIS FOLLOWING VARICELLA. [Am. Jl. Dis. Children, XXX, November. J. A. M. A.]

A boy, aged six years, following a mild attack of varicella, developed hematuria, nitrogen retention, coma, convulsions, right hemiplegia, right facial paralysis, loss of speech and of hearing. He recovered his speech and hearing and made an almost complete recovery from the paralysis but later showed mental and psychic changes. It was felt by Gordon

that there were two distinct and different pathologic conditions present, acute hemorrhagic nephritis and acute hemorrhagic encephalitis, the major part of the cerebral hemorrhage occurring in Broca's area.

Bielschowsky, A. THE EYE IN ENCEPHALITIS. [Klin. Woch., Jan. 15, IV.]

This paper calls attention to the rich symptomatology of the eye in epidemic encephalitis.

de Lange, C. EPIDEMIC ENCEPHALITIS IN INFANCY. [Ned. Tijds. v. Geneesk., LXVIII, Nov. 29.]

An interesting paper from this well known Dutch student of pediatrics and neurology. She here records two new cases of infantile encephalitis with a review of the literature. One of the peculiarities of infancy is that cerebral symptoms may occur in all infections and intoxications. As an acute attack of epidemic encephalitis in young children is accompanied by convulsions, tonic contractions, motor restlessness or apathy, unconsciousness, vomiting, and fever, which do not form a characteristic group of symptoms, de Lange thinks that it may be assumed with great probability that a number of cases pass unrecognized, while, on the other hand, it is likely that an incorrect diagnosis of epidemic encephalitis is often made in young children. De Lange's first case was an infant aged thirteen months, who, in addition to lethargy, myoclonic movements, and exaggeration of the reflexes, showed a remarkable pallor, probably due to changes in the sympathetic centers, and an insatiable appetite, which was attributed to a process in the hypothalamus. A complete change in the child's character also took place. The second case, which occurred in a child of seven months, was characterized by convulsions, exophthalmos, intermittent rigidity, exaggerated reflexes, boulimia, and a respiratory syndrome resembling whooping cough. Finally, complete recovery took place.

Mayrhofer-Grünbühel, J. ENCEPHALITIS AFTER MUMPS. [Wiener klin. Woch., LXXIV, Nov. 6.]

A clinical report of a small epidemic of mumps with late appearing orchitis and also four instances of encephalitis which appeared within four days of the onset of the mumps.

Yow, C. W. ENCEPHALITIS LETHARGICA WITH DIPLOPIA AS AN EARLY SIGN. [Lancet, June 21, 1924.]

This paper states that in view of the 100 per cent of diplopia in his series, encephalitis lethargica should be borne in mind by the general practitioner in every case of "double vision" encountered. Several of his patients consulted their doctors for diplopia, but the real nature of the disease was not suspected. These cases are frequently overlooked in the

mild and ambulatory cases unless a systematic inquiry is made into the history.

Moreira, M. POLYDIPSIA IN EPIDEMIC ENCEPHALITIS. [Lisboa Méd., September, 1924.]

This paper calls attention to this not infrequent symptom. It was observed in a chronic case, a girl of twelve years, in whom the striatal syndromy was marked, with change of character, but the tuber seemed to be intact and the mind active. Thirteen liters of urine were passed until the water drunk was limited. As soon as the intake was removed the output fell off. He argues for a cortical pathology but does not follow the psychological lead.

Gatewood, E. T. ACUTE TOXIC ENCEPHALITIS OF NASAL SINUS ORIGIN. [J. A. M. A., LXXXIII, May 16.]

One of the patients whose case is reviewed was evidently suffering from a mild progressive toxic encephalitis secondary to the suppurative ethmoiditis, probably by direct continuity. The second case suggests a violent toxic absorption. Gatewood says that cases simulating this picture frequently lead to brain operations with disastrous results. Patients manifesting such symptoms should emphasize the importance of a careful rhinologic examination. As the symptoms are toxic in nature, the improvements may be sudden or gradual after the eradication of the septic focus.

Boyd, W. EPIDEMIC ENCEPHALITIS: THE SECOND WINNIPEG OUT-BREAK. [Quart. J. Med., XVIII, 153; Med. Sc.]

The city of Winnipeg and the province of Manitoba have been visited by two epidemics of epidemic encephalitis, the first in the winter of 1919-20, the second in the winter of 1922-23, a few sporadic cases occurring in the interval. During the first epidemic there were 159 cases, of which 112 were males, the mortality being 39 per cent. In the second epidemic there were 165 cases, chiefly among the poorer classes, but the mortality was only 25 per cent. It was found very difficult to demonstrate the source of infection, and on the whole the evidence points to the existence of healthy carriers. In two cases there was a definite history of contact suggesting a period of about fourteen days. The characteristic feature of the clinical picture in the first epidemic may be described as lethargy, in the second as acute excitement; although cases of excitement occurred in the first epidemic and of lethargy in the second, on the whole the general picture in the two epidemics was very different. An interesting observation was the occurrence of an epidemic of hiccough at the same time as the first epidemic of encephalitis.

The second epidemic showed certain peculiar features, a great increase in respiratory rate and the occurrence of certain sensory phenomena; hyperesthesia of the face and sometimes neuritic pains in the arms were

observed. The onset of the disease was different in the two epidemics; in the first the disease usually began with malaise, diplopia, and lethargy, and was sometimes sudden, sometimes slow and insidious. In the second epidemic in some cases the onset was marked by sensory disturbances, neuralgic in type, which took the form of hyperesthesia and of pain. Muscular excitability was also a prominent feature, the following manifestations being observed: myokymia, Parkinson tremors, myoclonia, choreiform movements, athetoid movements, and convulsions. In 82 per cent of the cases of the second epidemic the symptoms pointed to disturbance of the cranial nerves. Nocturnal insomnia associated with diurnal somnolence was also a striking feature. The duration of the disease: The disease is characterized by an acute attack, a slow convalescence, and frequently by further late manifestations which may extend for years. The pathological lesions were similar in the two epidemics and showed the same congestion, thrombosis, hemorrhage, the same perivascular infiltration, and the same degeneration of nerve cells. Calcification was observed in the wall of the blood vessel, in the interior of vessel; and in the brain substance. Other characteristic lesions were the presence of amyloid bodies and marked vascular dilatation in the brain.

Core, D. E. ENCEPHALITIS LETHARGICA. [Br. Med. Jl., April 25, 1925.]

At the spring meeting of the Manchester Medical Society Core first described a typical case of average severity in a young man of twenty-four, and then dealt with certain symptoms and sequelae in detail. As regards the diagnosis of encephalitis lethargica, it was important to remember that no particular symptoms were essential; often enough the condition escaped recognition as an illness by the patient and his friends, and might only be revealed as such in the light of the after-course. The view that it was possible to establish a diagnostic scheme based upon symptoms was, he believed, untenable, and the present tendency to do so was responsible for the many erroneous diagnoses. Apart, however, from objective signs of implication of the nervous system, he had been increasingly impressed by the interesting relation existing between the symptoms and the patient's consciousness. In normal life there was a reasonably close parallelism between objective behavior and the personality of the individual; a man who was acting in an uncontrolled way usually showed signs of mental uncontrol, one who seemed to be profoundly unconscious was as a rule unconscious, and a delirious patient was generally not aware of his surroundings. In encephalitis lethargica, however, this association did not appear to obtain. The most restless and uncontrolled patient was quite often capable of giving a remarkably clear and logical account of his sensations without any evidence of psychical uncontrol. It was notorious that the patient somnolent to the point of coma was usually able to answer questions and to give information demanding considerable concentration; the same phe-

nomenon was observable in delirious patients. Furthermore, the ability to memorize subsequently events occurring in their environment at such times was considerable. In other words, instead of the normal association between the psychical state and the somatic symptoms, there was a dissociation which was anatomical rather than psychical, and which, he thought, was the most characteristic feature of the disease. The same principle was at work in the frank emotional loss of control that was liable to affect children as an after-state, and in the somatic want of control in the young adult with symptomatic paralysis agitans. From the standpoint of diagnosis this dissociation was, in his opinion, of greater value than objective signs of cerebrospinal implications.

In discussion, Dr. W. St. Clair McClure said that encephalitis lethargica was an infectious disease spread by "carriers": the organism responsible was universally distributed, but, happily, the majority of people were immune to its attack. A chart had been prepared showing that all ages were liable to attack, but that the incidence was most heavy between the ages of ten and twenty years. Males and females were about equally attacked, and there was no special preponderance of cases in any one particular occupation. Bad environment appeared to predispose to an attack. In a series of 244 patients in 1924, 20 per cent died; after twelve months 20 per cent had apparently recovered, and 60 per cent had residua of some kind, two-thirds of which were of a Parkinsonian character. Similar figures for 50 cases which occurred in Manchester in 1920 and 1921 were: mortality rate 56 per cent, recovery rate (three years after onset) 14 per cent, and incapacity rate 30 per cent. Taking into consideration wrong diagnoses and nonrecognized cases, 15 to 20 per cent probably represented the recovery rate, though it differed in different epidemics. The prognosis in any individual case was guesswork, but it was comforting to know that complete recovery was possible even in cases which at first appeared hopeless, and it was notable that some who did not recover were not, however, totally incapacitated. In many the disease process came to a standstill, and a useful and more or less happy existence was possible. Hiccough might occur as one of the symptoms of encephalitis lethargica, and be the one and only sign of the disease. Epidemics of hiccough and encephalitis, however, did not as a rule run concurrently: in Manchester, in 1924, a hiccough epidemic preceded the encephalitic epidemic. In December, 1923, and January, 1924, there was a generalized epidemic of hiccough in the city. The attacks consisted of persistent hiccough lasting three to ten days, unaccompanied in the majority of cases by other symptoms, though some few patients exhibited drowsiness. The sufferers invariably recovered without sequelae, and an inquiry twelve months later had not so far resulted in the discovery of any post-encephalitic signs among them. In the investigation of cases of encephalitis lethargica special inquiry was made among 1,200 contacts for a history of hiccough, but only two were discov-

ered. The households attacked by encephalitis lethargica were not those attacked by hiccough. Among the encephalitis lethargica patients hiccough was one of the symptoms in about 3 per cent. There was no evidence here favoring the view that the two diseases were associated, though such a possibility was not excluded. During the first three months of 1924 influenza of a mild type was said to be prevalent. It was not, however, until the middle of March, when the epidemic of encephalitis had subsided, that influenza of a severe type became evident. Special inquiry among contacts showed that it was the exception for a case of influenza to have occurred among them (10 out of 1,207), nor did the patients themselves suffer from influenzal symptoms. Influenza, though said to be present, did not to any extent invade households attacked by encephalitis. Influenzal cases had not given rise to encephalitis lethargica, nor had cases of the latter disease given rise to influenza. A study of the epidemic waves of influenza and encephalitis in Manchester showed that there was no correlation in point of time between the two diseases and provided no evidence in support of the contention that they were associated in any way one with the other.

Professor J. H. Dible, in further discussion, speaking from the pathological side, was in full agreement with the previous speakers as to the difficulties in clinical diagnosis. The first three cases in which he performed autopsies turned out to be tuberculous meningitis. He wished to draw the attention of the society to the experimental pathology of the disease. At the onset of its epidemic phase analogy with poliomyelitis suggested that it might be transmitted to apes and investigated upon the line so successfully followed by Flexner and his associated workers in the latter disease. Early experiments, however, particularly of McIntosh and Turnbull in this country, had failed to infect these animals, and it was not until 1919 that Strauss, Hirschfeld, and Loewe reported successes from America. These workers then reported further successes with nasopharyngeal washings and cerebrospinal fluid as well as with brain material as the source of the infecting agent, and they claimed that the rabbit and not the monkey was the animal of choice for this work. Early in 1920 Levaditi and Harrier claimed to have transmitted the disease to rabbits, and about the same time McIntosh published an account of similar successful inoculation of monkeys in series, and from monkey to rabbit. The speaker himself had, since 1920, been attempting to convey the disease to the lower animals, and gave details of many attempts to transmit the infection to rabbits, using material derived from ten cases of the disease. These experiments invariably failed, whatever type of material was used as inoculum and by whatever route that inoculum was introduced. Attention was drawn to the existence of two schools—one claiming that production of the disease in animals was so possible as to be used as a diagnostic measure with the cerebrospinal fluid, while the other school, of which Levaditi was the protagonist, claimed that the disease

was definitely inoculable, but only with difficulty, and that success was rare. His own personal experience had been entirely negative. Recently Flexner, whose authority in this type of work was very great, had published the results of a very large series of attempts made in conjunction with Amos. All material from cases of encephalitis had failed to infect; a positive result was obtained in one instance, but this was with cerebrospinal fluid from a case of cerebral syphilis and not of encephalitis. Such results called into question again the validity of all the published positive results. The matter was one of great difficulty and was complicated in many ways, one of the most confusing questions being the relation of the encephalitis produced in animals by certain workers to that which the herpetic virus of Grütner was capable of setting up. Much more work was required before the matter could be regarded as settled, but, in the opinion of the speaker, the claim to have transmitted the disease to animals was as yet unsubstantiated.

Dr. C. J. C. Earl agreed with the previous speakers as to the difficulty of diagnosis. Out of sixteen cases admitted as encephalitis lethargica under his care at Monsall Hospital, eleven were proved to be other conditions, including tuberculous meningitis, brain abscess, and brain tumor. Some of these cases could not be diagnosed on physical examination alone. He had seen the typical dissociation of which Dr. Core had spoken in a case of cerebral abscess situated in the region of the basal ganglia. One case admitted as mumps proved to be encephalitis with parotitis. In three out of five of the more acute cases admitted herpes labialis was present. In one of these cases the sister of the ward also developed herpes labialis, though without any nervous signs, and it was an interesting question whether she should be regarded as having suffered from the disease in a latent form or, on the other hand, having been immune to it. One of the acute cases had shown excitability to a marked degree. He mentioned one case of inversion of sleep rhythm in a child who was more intelligent and cunning during the night than in the daytime; he also wrote a much clearer hand at night.

Stallybrass, C. O., and McNeil, A. S. MULTIPLE ABORTIVE CASES OF ENCEPHALITIS LETHARGICA. [Lancet, Aug. 9, 1924.]

Multiple cases of encephalitis in one house are thought to be very rare. These authors on the contrary have observed in Lancashire and Cheshire four cases which were regarded as encephalitis in one household, in another three cases affecting three generations, and in a third household the father and son-in-law were affected.

In the first two instances attention was directed to the household through the occurrence of one well marked case. Upon inquiry other and preceding cases came to light who had not sought medical advice. In all instances, however, the occurrence of nystagmus or other focal signs points to encephalitis. During 1923, in Liverpool, 9 per cent of

cases were found to have been associated with a preceding case. In two instances two cases occurred in one household, two other cases were cousins, and next-door neighbors were affected on three occasions. It would appear that abortive cases are much more frequent than is generally recognized, but that they do not seek medical advice or are regarded as gastric influenza.

A considerable outbreak of encephalitis lethargica affected Liverpool and vicinity during the spring of 1923, the Wirral area in Cheshire and the western side of South Lancashire being simultaneously affected. The area affected last year has largely escaped this year, and it seems not improbable that the area surrounding Liverpool has been immunized to a considerable extent.

Edgeworth, F. H. ENCEPHALITIS LETHARGICA. [Br. Med. Jl., Jan. 31, 1925.]

This discussion was held at the Bristol Medico-Chirurgical Society. Dr. Edgeworth said that, from figures supplied to him from Dr. D. S. Davies, the medical officer of health, it appeared that in the five years 1919-23, 151 cases of lethargic encephalitis had been notified in the city and county of Bristol. Of these, 13 could not be traced, but of the remainder (138 cases) 68 had died and 70 had recovered more or less completely, a mortality of 49 per cent. Of the 70 cases recovering, 26 had recovered completely, while 44 presented residual phenomena. The figures for 1924 showed great changes; 158 cases had been reported, of which 27 had died. The disease had become more widespread, but with a far less mortality—17 per cent. The cause of this difference in the mortality might be the better medical recognition of the clinical features of the disease, but possibly it was due to a diminished virulence of the infecting organism. It had yet to be determined whether this diminished mortality was associated with a diminished incidence of residual phenomena. Dr. Edgeworth then gave a sketch of the chief phenomena of the disease. He pointed out that whereas it was known that the Parkinsonian syndrome might arise after an interval of health (citing a case where the interval was two and a half years), it was not known whether other residual phenomena might similarly arise.

Rebierre, P. CONTAGION IN CONGENITAL FAMILIAL MYOTONIA. [Presse Médicale, XXXII, Sept. 17.]

An atypical case of congenital familial myotonia is here discussed. The patient showed tonic spasms with a persistence of the knee-jerk and active abdominal reflexes. He began to be sick at the age of seven years, and several members of the family at about the same age showed the myotonia. A history of meningitis or other infectious disease in early childhood was obtainable from which the author deduces the myotonia as a sequel of infectious encephalitis. The familial character is due to the multiple contagion and is not to be analyzed on Mendelian lines.

Joltrain, E., and Hutinel, J. HICCUP AND HEREDITY IN EPIDEMIC ENCEPHALITIS. [*Presse Méd.*, XXXII, Sept. 10.]

A clinical report of a severe hiccough lasting for a week in a case of epidemic encephalitis. This respiratory sign seemed to depend on disturbances such as occur in a hemoclastic shock. In one case the hiccough appeared after an injection of a preparation of mercury.

7. BASAL GANGLION.

Söderbergh, G. WILSON'S PSEUDOSCLEROSIS. [*Acta Med. Scand.*, September 25, XXIX.]

This author very pointedly comments on the fallacies of our present knowledge of the extrapyramidal syndromes. Wilson's pseudosclerosis is something much more complicated than just a lesion of the lenticular nucleus.

Paterson, D., and Carmichael, E. A. FAMILIAL CEREBRAL DEGENERATION AFFECTING LENTICULAR NUCLEUS. [*Brain*, XLVII, May.]

Paterson and Carmichael describe a condition of cerebral degeneration occurring in two children, which presents the following characteristics: (a) It is familial. (b) Clinically it gives rise to apathy and apparent blindness without changes in the fundi of the eyes. (c) There is an absence of paralysis and abnormal movements. (d) The children live from two to six months and occasionally up to two years of age. (e) It is probably due to an intrauterine infection. (f) The severest pathologic changes are found in the lenticular nuclei, while the cortex is badly developed and degenerated.

Urechia, C. I., Mihalescu, S., and Elekes, N. ARTERIOSCLEROTIC RIGIDITY AND THE PYRAMIDOPALLIDAL SYNDROME. [*Arch. Internat. de Neurol.*, XLII, May, p. 161, 4 figs.]

By the term arteriosclerotic rigidity O. Foerster described a spasticity of various muscles which disappears in deep narcosis or after application of Esmarch's bandage and is exaggerated by the action of cold; this rigidity is identical with that of Parkinsonians: a fixed facies, short-stepping gait, bradylalic or explosive speech, perseveration of attitudes; sometimes adiadokokinesis; reflexes usually exaggerated; sometimes Babinski's sign, or loss of Achilles jerk, pupils often unequal and rigid; paresthesia in limbs; complaint of difficulty in retaining urine, with, later, urinary or fecal incontinence. The rigidity may be hemiplegic or paraplegic, or greater on one side; it comes on slowly, or may be preceded by repeated strokes. There is constant psychical disturbances of arteriosclerotic type (depression, affective lability, paranoid or hypochondriac ideas, Korsakow's syndrome, dementia). On necropsy diffuse arteriosclerotic lesions are found. Foerster attributes the rigidity to a lesion of

the corticocerebellar path, especially the middle cerebellar peduncle. Sterz describes a case of rigidity with speech disturbances, epilepsy, and Babinski's sign; in another case (where tremor had been present) he found softenings of the putamen and globus pallidus. Lesions of the pallidal path were found by C. and O. Vogt in cases of rigidity without tremor in more or less arteriosclerotic persons. Foerster in a recent study ascribes arteriosclerotic rigidity to lacuna or foci of softening in the globus pallidus. Martini and Isserlin publish a case of arteriosclerotic dementia with pronounced rigidity, slight tremors, and tetany; a softening was found in the lenticular nucleus affecting also the internal capsule. Lhermitte, Cornil, and Quesnel record a case of rigidity with dysarthria, dysphonia, dysphagia, and bilateral Babinski sign; to this syndrome of pseudobulbar phenomena and generalized contracture they give the name of "the syndrome of progressive pyramidopallidal degeneration." Lhermitte and Cornil record a case of a patient, aged sixty, with very great hypertonia of trunk and lower limbs, disturbances of phonation, choreiform movements of face, larynx, and pharynx. Foix also mentions a case of paraplegia with fixed facies, slow, monotonous speech, and double but inconstant Babinski sign. Claude and Majouanine record a case of generalized rigidity with pseudobulbar symptoms, especially spasmodic laughter and tears, with aphonia; the plantar reflex showed some degree of fan-like spreading of toes. Urechia and Elekes hold that Foerster's rigidity and Lhermitte's pyramidopallidal syndrome are really almost identical; they both occur in elderly persons, more or less arteriosclerotic, and indicate either a deficit or irritation of the extrapyramidal and the pyramidal paths; their symptoms vary according to the site and the extent of the lesions. The writers describe three cases: (1) a woman, fifty-five, was arteriosclerotic and prematurely senile, was free from evidence of syphilis and alcoholism, and showed pseudobulbar and pyramidal symptoms with generalized rigidity. Necropsy showed multiple softenings which had destroyed the lenticular and caudate nucleus, and had affected the internal capsule and the centrum ovale in the right frontal region. Microscopical examination showed syphilitic vascular lesions and softenings in the basal nuclei, especially the globus pallidus, substantia nigra, putamen, nucleus dentatus and caudatus. (2) A woman, thirty-five, had been a Parkinsonian for two years, with vesical symptoms; probably she had for three months an epidemic encephalitis; syphilis and disseminated sclerosis appear to have been excluded. (3) A woman, fifty-nine, had rigidity, pyramidal symptoms, dementia, and Parkinsonism; positive Wassermann in spinal fluid, and hyperalbuminosis. Necropsy revealed syphilitic arterial lesions in meninges and cerebral cortex, and very intense ones in the globus pallidus, corpus Luysii, and substantia nigra, but less intense in the neostriatum and the dentate nucleus. In these regions arterites of Heubner's type predominated, with frequent

vascular obstructions and consecutive softenings. Two rather rare lesions were present, viz., (1) the mixed type of arteritis of Nissl-Alzheimer, and (2) a colloidocalcareous infiltration of certain vessels. The former arteritis occurs here with numerous arterites of Heubner's type. The colloidocalcareous infiltration has been found in syphilis by certain authors. There was increase of iron in the optostriate nuclei, a fact which is in accord with the increase of iron found by Spatz in lesions of the extrapyramidal path. The frequency of vesical disturbances in these pyramido-pallidal syndromes suggests the presence of a vesical center in the corpora striata, the existence of which has been often previously postulated by several writers. [Leonard J. Kidd, London, England.]

Salomon, A. TREATMENT OF CHOREA BY LUMBAR PUNCTURE. [Deut. med. Woch., L, February 8, 166.]

Salomon has found that in most cases of chorea minor the well established treatment with arsenic is effective, but its action is slow, whereas that of lumbar puncture may, in some cases, be dramatically rapid. As long ago as 1914 it was pointed out by Passini that the cerebrospinal fluid in chorea is under an abnormally high pressure, and that 30 to 40 c.cm. of cerebrospinal fluid can be easily withdrawn on lumbar puncture. He assumed that in the cases deriving benefit from lumbar puncture the manifestations of chorea minor were due, in part at any rate, to the mechanical pressure or the toxic contents of the cerebrospinal fluid. The author confirms some of Passini's views and records in detail several cases of chorea minor in which lumbar puncture was undertaken. In some of these cases it revealed an abnormally high intraspinal pressure, which in one case was as high as 350 mm. of water. In two cases rapid improvement, and in three other cases more slow improvement, followed this procedure, which was most successful in the cases of short duration—that is, only ten to twelve days. Probably even better results would have been obtained had more of the cerebrospinal fluid been withdrawn than was the case in some instances. Thus the results were best when 25 c.cm. were withdrawn. When only 5 to 10 c.cm. were withdrawn the benefits accruing were not so prompt.

Bing. SECONDARY SYMPTOMS OF "EXTRAPYRAMIDAL RIGIDITY" (AKATHISIA, MICROGRAPHIA, KINESIA PARADOXA). [Schweiz. med. W., LIII, Nos. 7, 8.]

Bing discusses the symptom seen in a case of paralysis agitans where the patient could not remain sitting for more than a few minutes but was irresistibly compelled to spring up, stand for a while or walk a few steps. The symptom reappeared when he sat down again. Bing recognizes it as that described by Haskovec under the name akathisia (from the Greek *kathizein*, to sit). Bing brings forward other cases from the literature and explains the symptom as due to a feeling of tension when the origins

and the insertions of the muscles of the upper and lower leg approximate one another in the sitting position, analogously to Westphal's "paradoxical foot phenomenon." The micrographia may be considered as a cerebellar hypometria antagonistically to a dysmetria. The author cites an extreme case of kinesi^a paradoxa after encephalitis. The patient was so stiff and helpless that he could scarcely move himself and had to be fed. But he could make a quick running step, dance and easily turn while doing so and grasp with his hands and teeth an object thrown him.

Gordon, Alfred. EXTRAPYRAMIDAL HEMIPLEGIA. [Philadelphia Neurological Society, January 25, 1924.]

The clinical type presented in the following case is of interest from a physiological standpoint as well as from the point of view of localization. It differs from the commonly known form of cerebral hemiplegia in many essentials and yet it may be taken for the latter if care is not exercised in the discrimination and interpretation of each. Almost an identical example was presented by the writer at the meeting of the Philadelphia Neurological Society, October 23, 1914, and the paper on the subject was published in the Medical Record, December 12, 1914.

J. P., female, aged fourteen, was born normally. When she was eighteen months old, she developed convulsive seizures, at first of a generalized type, but later they became confined to the right side. They continued up to the age of nine when they completely disappeared. In one of the attacks she developed a right hemiparesis, face included. On the next day voluntary and involuntary, jerky and irregular movements appeared on the paralyzed side. Presently the condition is as follows:

The right arm and leg are paretic. The lower part of the face is slightly deviated to the left side. Unlike a genuine hemiplegia she does not hold the trunk to the normal side in walking. There is no rigidity in either of the limbs, resistance can be overcome. The arm has a constant tendency to move away from the trunk. Upon passive and active movements of the affected limbs their muscles become strongly contracted. Upon the least approach or attempt to touch them they become at once violently contracted. The tendon reflexes are greatly increased on the same side, but there is no ankle-clonus and the plantar reflex is flexor in type by any of the methods. The abdominal reflex is preserved on the right side. Sensation to all forms are normal. The right pupil is somewhat larger than the left, but both react to light. The speech and mentality are intact. All biological tests are negative.

Comment. Several possibilities are to be considered from the standpoint of diagnosis. First of all, organic hemiplegia. The suddenness of onset, paralysis on one side involving the leg, arm, and face in the course of a focal epilepsy are facts in favor of an organic hemiplegia. On the other hand, the absence of marked contractures in the arm and leg in spite of the long standing of the condition, the absence of the

characteristic resistance on passive motions, the absence of ankle-clonus and especially of the toe-phenomenon, the peculiarity of extreme muscular contractions on the involved side on voluntary and especially on passive movements—all these symptoms are against the classical cerebral hemiplegia with its usual localization in the internal capsule of the opposite hemisphere.

A variety of dystonia musculorum deformans is another diagnosis to be considered in view of the contractures and jerky movements observed when one attempts to move the patient's limbs. But we do not find here the twitchings in the muscles of the pelvic girdle and quadruped-like gait with the clownish movements.

Hysteria could be also eliminated in view of the onset of the hemiplegia at a very early age, in view of the total freedom from general and special sensory disturbances on the affected side, finally of the absence of hysterical stigmata.

The present case has some points in common with S. A. K. Wilson's syndrome with this difference—that the symptoms are confined to one side. We find here very little paralysis; muscular contractions which increase with movements; preservation of abdominal reflexes; finally and very emphatically, absence of toe-phenomenon in spite of the spasticity of long standing. This group of symptoms speaks in favor of integrity of the pyramidal tract. In view of a certain resemblance to Wilson's disease it is presumable that the lesion is in the corpus striatum but only on one side. By analogy one may perhaps classify the present case as an example of "Unilateral Extraparapidal Degeneration." [Author's abstract.]

Booth, David S. PARALYSIS AGITANS. [Jl. Missouri Med. Assoc., XX, January.]

This is a comprehensive study of this elusive disease, notwithstanding it is receiving a great deal of attention by investigators. The author mentions the several synonyms (some rare) of paralysis agitans and discusses the anatomy, physiology, pathology, etiology, prognosis and differential diagnosis, and enumerates the rare symptoms not usually given in textbooks, the latter as a possible clue to the etiology. The article is illustrated as an aid in locating the basal ganglia, the seat of pathological changes in the several syndromes of this disease, and contains original charts which graphically depict the functions of the basal ganglia—show the several components of the corpus striatum and demonstrate the clinical syndromes resulting therefrom. The author calls attention to an apparent incongruity in that paralysis agitans is ordinarily defined as a functional disease, notwithstanding the pathological lesions almost constantly found post mortem. Brief reference is made to the more recent authoritative pathological findings and what appears to him to be the most plausible theories, from which he draws his own conclusions

and formulates treatment, the success of which is indicated by several illustrative case records:

The author draws the following conclusions:

(1) The ultimate cause of paralysis agitans has not yet been proven.
 (2) The post-mortem findings are so variable and contradictory that the pathology is uncertain.

(3) The supposition that it is due to endocrine dysfunction is apparently the only theory advanced which reconciles every reported post-mortem finding.

(4) Treatment is symptomatic and necessarily empirical, but sufficiently definite and effectual to justify intensive treatment under proper professional supervision with the probability of relief in all stages and the possibility of a clinical cure, arrest or amelioration in the early stage.

Urechia, C. J., and Rusdea, N. HUNTINGTON'S CHOREA. [*Revue Neurologique*, XXXIII, May.]

These authors record a case of Huntington's chorea with autopsy. Summarizing literature on the subject they note in connection with lesions in the corpora striata, that even at a time when the physiology of the basal nuclei was but little understood, changes in these bodies were regarded as accountable for the chorea. Somewhat later foci of disease were recognized in the internal capsules in cases of hemiplegic chorea. More recently Anton and Bonhöffer have ascribed the chorea to a lesion of the superior cerebellar peduncles. In the instance reported by the authors very intense degenerative and sclerotic lesions were found in the putamina and caudate nuclei. There were less decided changes in the corpora luyssii and the dentate nuclei. Minimal changes were found in the red nuclei, substantia nigra and optic thalami. In the cortex cerebri pronounced alterations were found in the frontal and parietal lobes, particularly in the deeper cell layers. Iron, which is normally present in cells of the basal nuclei and is said to be increased in spastic conditions, was found in diminished quantity. The pigment content of the cells called for no special comment. Finally, the writers support the view that lesions of the corpora striata form the anatomical basis of the disease.

Goldstein, K. ON INDUCED VARIATIONS IN TONUS IN MAN, ETC. [*Ztschr. f. d. ges. Neurol. u. Psychiat.*, LXXXIX, 303, Med. Sc.]

The author describes at great length the physical signs and certain involuntary movements observed by him in three cases, and gives an interpretation of the latter in terms of what he conceives to be the tonic reflexes of Magnus and de Kleijn. The first case was that of an aged man, who subsequently to an attack of giddiness was found to show impaired appreciation of size and shape in the right hand, and a diminished acuity to pressure in that limb. Apart from some ataxy of the arm, and

a tendency of the limb to "wander" when extended, no physical signs were found. A clinical diagnosis of hemorrhage into the cerebellum was made. The second case was that of a middle-aged woman, the subject of several cranial nerve palsies. No motor or sensory symptoms other than those referable to these nerves were present. The author says that diagnosis is uncertain, but probably a meningitic affection involving "the supracerebellar connections" was in question. The third case was that of an old soldier (in more senses than one), who, following a trivial head wound, developed, after an interval of two months, headache, tremor of the right hand, ready fatigue, irritability and "nervousness" ("Schreckhaftigkeit"). These symptoms were still present four years later and are made the basis of a diagnosis of "cerebellar irritation." These diagnoses are not less astonishing than the "reflex" reactions described as occurring in the three subjects. The reactions in question fall into two main groups. The first consist in a tendency of the extended limb to assume a constant position of almost complete pronation of the forearm, no matter in what degree of supination the hand be placed originally. This tendency is said not to be apparent in normal subjects or in cases of pyramidal system disease, and is described as a "Stellungs-reflex," the function of which is to bring the forearm into the most comfortable position for the subject. The second group, which was most exhaustively studied and best developed in the old soldier, consists in "pseudospontaneous" movements of involuntary nature in which the limbs make wide excursions through space directly the subject closes his eyes. These excursions vary according to the general posture of the subject in relation to the horizontal, and can be further modified by changes in the posture of the head. It is impossible to regard these, as described and illustrated, as of organic origin, more particularly when their occurrence is reported in a subject with purely psychoneurotic symptoms. Whether they were hysterical, or, as seems highly probable, entirely voluntary and performed for the benefit of the observer, cannot with certainty be determined. It is clear that these observations cannot be correlated with the results of Magnus and de Kleijn's researches, to which they bear no discoverable relation, and the author's interpretation and conclusions can have no other result than to confuse an already difficult subject in the minds of clinical neurologists. [Walshe.]

Starkey, F. R. PARALYSIS AGITANS. [Mich. Med. Soc., XXI, June.]

First, among causes comes senility with circulatory degenerations; usually begins between fifty and seventy years of age; has been noticed as early as ten or even three years. These early cases can scarcely be looked upon as true paralysis agitans. Seems to have a selectivity for the white race, comparatively rare among the colored races; heredity or family tendency apparent, a number of cases with two or more members of the family having the disease have been reported. The vegetative nerv-

ous system is always involved; shown by vasomotor, circulatory or nutritional disturbances. Emotional disturbances and shock, formerly held to be etiological factors, doubtful. Trauma, unless the basal ganglia are actually involved, can scarcely have a closer etiological relation. In one case of mine, pressure on the basal ganglia may have played an etiological rôle. Tremors that were so numerous during the war were not actually due to the physical and emotional hardships incident thereto but these simply uncovered latent conditions which would have eventually manifested themselves. Although this group was considered purely functional, this does not necessarily eliminate them from the group we are now considering; that is, I believe, a transitory organic involvement of a circulatory nature is possible which eventually clears up leaving no residue. Conditions bringing on premature arteriosclerosis have probably a causal relation. Epidemic encephalitis, which has left so many residues of a Parkinsonian type, must be considered as a possible etiological factor. The condition is insidious in its onset as a rule, although so-called fulminating cases occasionally occur, especially among the young. Most frequent prodromal symptoms are indefinite pains in acral parts of body, especially upper extremities. These pains usually disappear after the onset of motor phenomena. Parasthesias and psychic thermal disturbances are sometimes causes of complaint. Occasionally gastrointestinal involvement is an early symptom. Asthenia is an almost invariable early symptom. It varies greatly from day to day. Symptoms complained of in neurasthenics are usually present throughout the disease. Anxiety, palpitation, vertigo, sense of constriction in the head. When well established, more classical symptoms appear. These are sensory, motor, vasomotor, secretory and psychic. Increased tonus with *rigidity, which should be carefully distinguished from spasticity*. Reflexes never more than slightly increased, usually normal or decreased. Characteristic expressionless face. Tremors of constant amplitude, usually passive in kind, temporarily arrested by attention; strong emotion may cause disappearance for long time; such a case now under my care; developed and recovered from a depressive psychosis. Other cases aggravated by emotional disturbance. Physical shock may change the condition for better or worse, usually the latter. Propulsive (festination) lateropulsive and retropulsive movements are common. As condition progresses rigidity increases and contractures with complete paralysis may occur. There are cases that run their entire prolonged course without either tremor, rigidity, contractures or paralysis. Rigidity causes the individual to move in mass. Wooden face, forward attitude of body, peculiar position of the hands, midway between pronation and supination, form a striking picture. Important feature of this disease is the great variability of intensity of symptoms from day to day and hour to hour. I believe this shows a distinct psychic component. Although the trend is always downward, it does not appreciably shorten life. One case under my observation had the

disease nearly forty years and still ambulatory; another bedridden case with extreme rigidity and emaciation survived for more than fifteen years after complete paralysis. Dysphagia, dysarthria and sialorrhea are sometimes disagreeable symptoms. Ptosis and rigidity of eye muscles interferes with eye movements. The extrapyramidal nature of this disease is now well established but the corpus striatum proper, namely, the caudate and lenticular nucleus, the substantia nigra and subthalamicum are all so intimately related to automatic and associated movements that it is difficult, in view of their inaccessibility from an experimental standpoint, to separate their physiology with absolute precision. Their differentiation from the pyramidal system, however, is absolute. The only uncomplicated cases of paralysis agitans ever thoroughly studied by modern pathological methods showed disintegration of the globus pallidus only.

Argument: The corpus striatum or its equivalent exists through the entire scale of zoölogy from cyclostomes to man. It is a primordial structure. In the lowest vertebrates it represents the highest motor correlating center. In fish it comprises practically the entire cerebrum, excepting olfactory area. Automatic and associated movements, like circulation and respiration, must be continuous to maintain equilibrium and position in the water. These movements, phylogenetic in origin, are acquired as a motion formula and are definitely purposeful. They are characterized by constancy, rhythm, intersegmental association and automaticity. Ascending further in the phylogenetic scale to terrestrial forms, the constancy becomes unnecessary as it would tend to injury against solid media, besides dissipating energy unnecessarily. Inhibition of these automatic and associated movements is established and in the reptilian orders we see the beginning of the neostriatum which becomes the inhibitor and adjusts these animals to their environment; displacing constant rhythmical associated movements with undulatory action, interrupted by periods of complete repose, and, is the first step in the development of activities incident to individual experience in contradistinction to those of a generic nature which characterize the corpus striatum. Here a new motor center is created above the primordial one in the ganglia and it develops a new motor pathway; as a result of which the somatic muscles come under a dual control: first, that of the corpus striatum, which, because of its ancient character, is called the paleokinetic pathway; second, connections established by means of new fibers arising in the new cerebral cortex, which, because of its subsequent acquisition, is called the neokinetic pathway. It gradually increases in birds and mammals. These fibers separate the caudate from the lenticular nucleus. Putamen of the lenticular nucleus and the caudate nucleus constitute the neostriatum. The phylogenetic distinction between the old and the new portions of the corpus striatum indicates the gradual extension of the correlation of motor impulses which develops in passing from the lower to the higher

vertebrates and their imprint is seen even in man. Particularly well brought out by the ultra-rapid camera and are seen in individuals of sluggish mentality and in infants who show a tendency to flexion and extension of muscles of the hands and feet in mass. Possibly residue of paw movements of lower animals. The function of the corpus striatum is to regulate automatic and associated movements which are not eliminated in man but are overshadowed by skilled acts developed in man by experience. This dominance of the neokinetic system over the paleokinetic increases as we ascend the scale, but where, through injury or disease, the function of these later acquired elements is impaired the primordial function again asserts itself. The corpus striatum bears the same relation to the motor apparatus as the thalamus does to the sensory system. It is the great infracortical center for the control and regulation of automatic and associated movements.

Diagnosis: A well developed case can scarcely be confused with any other condition; nevertheless there are cases of cerebrospinal syphilis with spasticity, massive forward movement of the body and tendency to festination which closely resembles paralysis agitans. May be differentiated by abnormalities in pupils, change in reflexes and laboratory findings positive for lues. Multiple sclerosis may be ruled out because the tremor is coarser and intentional in type, spasticity not rigidity, with increased reflexes, are apt to be present; although reflexes may be normal or absent. Disturbances of speech and deglutition, nystagmus and pallor of temporal halves of ocular disc are frequently present. There may also be symptoms of a degenerative nature affecting the mentality, usually absent in paralysis agitans. In arteriosclerosis of senile type there may be a tremor which is constant and increasing by intention. Other signs of senility, sclerosis of blood vessels and ocular fundi, etc. Epidemic encephalitis can be eliminated by history and presence of disturbance of temperature.

Treatment: Although incurable we can do much to make the condition of these patients more bearable. For general rigidity: heat, including warm baths; patient more comfortable in warm weather, therefore warm climate, thus avoiding chilling; systematic exercise which can be developed to suit the individual case; passive movements and vibration help cramped muscles; should be taught to relax. Psychotherapy is of assistance in overcoming anxiety and other mental symptoms and even rigidity. Organic derivatives are of no avail, excepting when these glands of internal secretion can be demonstrated to be at fault. Use of foreign proteids is useless. Of the medicinal substances, hyoscin hydrobromate gives the most beneficial results. Strychnine is contraindicated; caffeine stimulates cerebration; sedatives, sodium bromide, asafetida, valerian are of use in quieting nervous excitement; luminal assists in promoting sleep. When sialorrhea exists belladonna should be given. Patient should be

placed in as agreeable an environment as possible and given every encouragement to promote cheerfulness.

Prognosis: Unfavorable. [Author's abstract.]

III. SYMBOLIC NEUROLOGY.

1. PSYCHONEUROSES; PSYCHOLOGY; PSYCHOANALYSIS:

Bumke, O. PHYSICIAN AS CAUSE OF PSYCHIC DISTURBANCES. [Deut. med. Woch., Vol. 51, Jan. 2, J. A. M. A.]

The present holder of Kraepelin's chair in Munich has encountered many patients with "iatrogenous" affections. A careless word about the arteries, about the "heart showing a slight tendency to fatty degeneration" or the like, might endanger the whole outlook of the patient. Nearly every one has a dread of disease that makes a critical attitude impossible. Even a physician is unnecessarily overanxious about his physical condition, or at least about that of his wife or children. He believes that the worst excesses in masturbation cause less harm than some occasional remark by a physician on the subject, to persons who hardly ever have done it. Hysteria is a dangerous diagnosis, since—by way of the detour over the relatives—it produces an actual asocial attitude on the part of the patient. He knows of one instance in which a physician endeavored to tranquilize his patient by assuring him that certain other persons with the same condition "had lived as long as two years." A man with a syphilitic aortitis had lived happily until a prominent internist warned him not to take the risk of going on the street without a companion. The expected breakdown did not occur in the following seven years, but the patient became a grave hypochondriac. There is no need for lying, but it is not necessary to tell the patient everything—especially the things which we do not really know ourselves, such as the prognosis with Argyll Robertson pupils, problems of heredity, etc. Most people know how to die much more decently than they would have believed possible while they were healthy. Yet very few really wish and can bear to be told the whole truth.

Binet, Léon. TOBACCO AND THE CEREBRAL FUNCTIONS. [Presse Méd., Vol. 33, Jan. 31.]

Recent experiments seem to show, according to this paper, that the tobacco smoker absorbs some nicotine: W. Straub states that after smoking one cigar definite traces of nicotine may be found in the urine during an average period of eight hours. Binet states that injections of nicotine produce (1) cerebral congestion, (2) damage to cortical nerve cells, (3) disturbances of memory in animals intoxicated by tobacco smoke. Wertheimer has proved that nicotine is a most powerful cerebral stimulant and produces definite increase in the volume of the brain; in

this process the acceleration of the heart's action is an important factor. Georges Guillaïn and A. Gy found that a rabbit suffering from chronic tobacco poisoning showed signs of extensive cellular lesions in the liver and cerebral cortex, without vascular, meningeal, or neuroglial injury. P. Matthieu and L. Merklen constructed a labyrinth which white mice had to traverse in order to reach their food or their cage; it was found that normal mice traversed the labyrinth in from twelve to twenty seconds. The animals were intoxicated by being placed in an apparatus through which air circulated at the rate of 1 liter a minute, bringing cigarette smoke from a special burner in which a cigarette was consumed in ten minutes. It was found that after a single stay of ten to fifteen minutes in the apparatus there was no immediate symptom of disturbance. The mouse ate, drank, and traversed the labyrinth as quickly as, or even more quickly than usual. Later, however, it showed hesitation and made mistakes at the "cross-roads." The animal required a longer time to traverse the accustomed route: after twenty-four to forty-eight hours there was a delay of fifty to a hundred seconds. It did not return to normal until two or three days had passed. Daily repetition of the experiment increased the delay in completing the passage of the labyrinth and prolonged the return to normal conditions. The function of "evocation" appeared to be more disturbed than that of "fixation," as a second passage of the labyrinth was performed in almost normal time immediately after a slow and hesitating passage. Binet considers that these facts indicate that tobacco has a toxic action on the brain.

King, G. E. KANSUH AND ITS DISEASES. [China Med. Jl., Jan., 1925. J. A. M. A.]

The Chinese are usually regarded as being a phlegmatic race, not likely to show neurotic manifestations, but King has found that their training is often of the repressive type, and that marked cases of neurosis, particularly of anxiety hysteria, abound. Modern analytic methods are often highly successful in the treatment of such patients.

Lyle, R. P. R. CHRONIC PELVIC PAIN IN RELATION TO NEURASTHENIA. [Brit. Med. Jl., Jan. 17, 1925. J. A. M. A.]

Lyle feels that large numbers of unnecessary operations have been and are being performed for chronic pelvic pain, owing to the operator's not recognizing the general condition of the patient and ascribing all the various symptoms that she complains of to some little pelvic abnormality, which could not in any way, even with the most vivid imagination, be rightfully attributed as the cause of her general condition. In other words, operations are being performed from an entirely wrong diagnosis. In many cases a careful examination of the pelvis, and an assurance that she has no pelvic disease and that the condition is merely due to worry or nervousness or constipation, will make the patient feel quite well. In other cases a mixture of potassium bromid and magnesium sulphate,

together with fresh air and outdoor exercise, telling her not to tire or fatigue herself in any way and to stop worrying, will generally be sufficient treatment.

Weinberg, A. A. PSYCHE AND INVOLUNTARY NERVOUS SYSTEM. III. Communication. [Zschr. f. d. ges. Neurol. u. Psych., Vol. XCIII.]

Weinberg draws these conclusions from intensive experiments upon the expenditure of psychic and physical energy: the raising of the level of consciousness is accompanied by heightened sympathetic activity, its lowering by heightened parasympathetic activity; increased expenditure of psychic energy is accompanied by increase of "physical" energy, *i.e.*, increased metabolism, increase of the catabolic, oxydative, exothermic, physiological processes; accession of psychic energy as in rest and sleep, by accession of "physical" energy, *i.e.*, increase of the anabolic, endothermic, physiological processes.

Strominger, L. and Birmam-Bera. ASTHMA AND SEXUALITY. [Jl. d' Urol. Méd. Chir., June, 1924.]

A case of asthma in a thirty-two-year-old man is here discussed in which the paroxysms occur two or three days after each intercourse, and persisting for about three days (typical of Freud's description of the anxiety neurosis). After light cauterization of the inferior turbinate bone the attacks ceased. What else happened is not reported. A double reflex arc, genitonasal and nasopulmonary, is assumed, but the really important factors are not recorded.

Pavlov, I. P. CONDITIONED REFLEXES. [Brit. Med. Jl., Editorial, Jan. 10, 1925.]

Professor Pavlov, the eminent Russian physiologist, is now more than seventy-five years of age, and yet he continues to publish research work and to direct the investigation of a group of younger scientists who have clustered round him. The earlier work of Pavlov is well known in this country, and has for many years occupied a prominent place in English textbooks of physiology, but his later discoveries have not received the same publicity, partly because Pavlov appears to be of a singularly modest disposition, and partly because much has been published in Russian scientific journals not available to many readers. This later work ought to be better known, and we propose to call attention to it, but before doing so our readers may be interested to have some details of the career of this venerable man of science.

Ivan Petrovitch Pavlov was the son of a village priest, and was born at Rjäsan in Russia on September 14, 1849. He obtained his preliminary qualification to practice medicine in 1879, and four years later took the M.D. of St. Petersburg University. After two years' study in Germany under Ludwig and Heidenhain he returned to physiological research in Russia, but it was not until 1897, at the age of forty-eight, that he was

appointed to the professorship of physiology in the Military Medical Academy at St. Petersburg. During these early years of his career he developed a new method of approach to physiological problems, and perfected a technique peculiarly his own. The distinguishing feature of his early work is well described by Prof. E. H. Starling in a character sketch which appears in the current number of *Nature*. Improving on the customary physiological methods of the day, Pavlov set out to study the functions of the organs of the body as far as possible under natural conditions, thereby avoiding disturbing influences brought about by discomfort, pain, and the effects of general anesthesia. Two examples will illustrate the precautions he took to keep the animals which were to be the subject of his experiments under the most natural and favorable conditions. His first papers, published in German in 1878-79, were concerned with the regulation of the blood pressure in dogs, and, in order to accustom the animal to the circumstances of the experiment, he trained a dog to allow the insertion of a cannula into a superficial artery on the inner side of the knee, and to remain quiet while the blood pressure was recorded. Again, when he first performed the classical experiments on dogs in which he provided a fistulous opening into the stomach and esophagus for the purpose of studying gastric secretion, he could not be satisfied that the animals would receive sufficient care in his laboratory. He therefore took them home to his small flat, where they shared the comforts enjoyed by his wife and four children.

Although for many years every student of physiology has been brought up on Pavlov's classical work on digestion, a reference must be made to these experiments because they provided him with a technique which has served him in wider fields of research. His exceptional skill as an operator enabled him to make a fistulous opening into the esophagus and stomach, and he observed that a few minutes after such an animal was given food a copious flow of digestive juice appeared through the gastric fistula. He found that even the sight or smell of food produced a psychical secretion due to the effect of appetite. He proved that the efferent channel for this reflex was by way of the vagus nerve; secretion could be stopped by section of the vagus, and began again after artificial stimulation of the cut vagus nerve.

After twenty fruitful years of study of the physiology of digestion, Pavlov came to concentrate his attention on the physiology of the nervous system, making use of the appetite reactions as an instrument for the study of the behavior of the cerebral cortex. This study, which has occupied the last twenty years of his life, soon brought him to certain novel conceptions concerning the educable part of the central nervous system, the home of reactions learnt in the course of an individual's own existence. A preliminary account of this work was given by Pavlov in the Huxley Lecture delivered at Charing Cross Hospital in October, 1906. We can claim to have done something to bring Pavlov's later work into

prominence, for the article by Dr. W. H. Gantt, entitled "A medical review of Soviet Russia," was a careful statement of Pavlov's point of view. We published also a report of the address on inhibition, hypnosis, and sleep, delivered by Pavlov at the eleventh International Physiological Congress in Edinburgh.

To attempt to cover the whole of the ground on which Pavlov's rare genius has thrown new light would be far too big a task; we will refer only to three subjects about which his views deserve wider recognition—namely, the physiology of sleep, the transmission of acquired characteristics, and the question of trophic nerves.

It may be unexpected that experiments on the secretion of gastric juice should lead to a theory about sleep; but such is the case, and knowledge gained from these gastric reflexes has been turned to advantage in other directions. Pavlov distinguishes two types of reflex—the unconditioned and the conditioned. When acid or gustatory substances are introduced into the mouth of a dog a flow of saliva ensues. This is the "unconditioned reflex," an inborn connection between an outside agency and corresponding definite activities of an organism. In contrast with this, any individually acquired reflex Pavlov describes as a "conditioned reflex." For instance, if some other kind of stimulus, such as the ringing of a bell, be associated for a long time with presentation of food or introduction of acid, this associated stimulus alone becomes sufficient to evoke a flow of saliva without actual presentation of food. This "conditioned reflex" must be due to the laying down of new paths in the cerebral cortex. A conditioned reflex, if not accompanied by the unconditioned, is temporarily suspended or inhibited. Now Pavlov holds that every conditioned stimulus, as soon as it is used alone, sooner or later leads to a drowsy state or to sleep. In his address at Edinburgh he gave an example of a dog which became drowsy and fell asleep after the repetition of the conditioned stimulus in the absence of feeding. He believes that the inactive state spreads from exhausted cells to others not involved in the work, as though the exhaustion of certain cells led to the formation of some substance capable of being carried to distant parts and acting there. The inhibition which we are always exercising during the waking state is to be regarded as a partial sleep—a sleep distributed in small parts and within narrow limits; generalized sleep is a diffused and continuous inhibition of the hemispheres, radiated over the whole area of active points of the great hemispheres and even over some parts of the brain which lie below the great hemispheres. Hypnosis he regards as an inhibition spread over the usually active points in special parts of the cerebral cortex. It must be admitted that the reasoning in this argument is not easy to follow, but we have not before us a full account of all the facts by means of which Pavlov supports this theory. We refer to this subject because of the conclusions at which Pavlov has arrived, and because it illustrates the unusual fertility of his mind.

These conditioned reflexes represent an individual attainment, and Pavlov turned to inquire whether or not they are inherited. This research has rekindled the old controversy as to whether or not acquired characteristics can be inherited; or perhaps it would be more correct to say that he has stirred up to a more lively activity fires that have been smoldering of recent years. In brief, he found that with the first set of wild white mice on which he experimented in order to establish the conditioned food reflex, using the sound of an electric bell, it was necessary to repeat the combination of ringing of the bell and feeding three hundred times in order to form a well established reflex. The second generation formed the same reflex after one hundred repetitions. The third generation acquired this reflex after thirty repetitions, the fourth after ten, and the fifth after five only.

A good account of Pavlov's views on trophic nerves was given by Dr. Gantt in the paper referred to above. Dr. Gantt remarked that the experience of clinicians, and especially of surgeons, has for a long time tended towards a belief in the existence of trophic nerves, whereas physiologists have been inclined to attribute so-called trophic changes to alterations in blood supply effected through vasomotor fibers. Well aware of this difference of opinion, Pavlov has always leaned towards the views of the clinicians that special trophic nerves do exist, and as the result of his own and his colleagues' researches has now satisfied himself that all organs and tissues have three classes of nerves—functional, vasomotor, and trophic. His opinion is best given in his own words: "Thus we would suppose that every organ is under a triple nervous control: (1) functional nerves, which may be inhibitors or excitors—for example, those nerves which produce contraction of muscle or the secretion of a gland, or inhibition of both of these functions; (2) vasomotor nerves, which regulate the bulk carriage of chemical materials and the taking away of refuse by augmenting or diminishing the flow of blood to the organ; (3) trophic nerves, which determine in the interest of the organism as a whole the exact quantity of material utilized by every organ."

No doubt many people in this country, having heard so much of the distress of the middle classes in Soviet Russia, must have feared that such distinguished scientists as Pavlov were hindered in their research work. It is reassuring to hear from the first-hand experience of Dr. Gantt that Communist officials take interest and pride in the scientific institutions of Russia, and that the Soviet authorities have done what they could with limited means to keep science alive and to encourage its growth.

Brown, W. L. ENDOCRINES IN PSYCHONEUROSES. [Br. J. Psych., Med. Sec., Vol. II, p. 1.]

This interesting paper does not deal with psychoanalysis primarily but shows a number of close psychoanalytic relationships. The author's own synopsis is as follows: The hormone theory at one time tended to

an undue depreciation of the importance of the nervous control of the body. The primitive nervous system was evolved for defensive purposes, and the sympathetic nervous system retains primitive features both structurally and functionally. There is a close association between the sympathetic nervous system and the endocrine glands as defensive mechanisms, and their action is reciprocal. The endocrines, gonads and sympathetic nervous system form a basic tripod entrusted with the defence of the individual and the continuity of the species. Endocrine glands may be influenced by toxic, nutritional and psychic factors, so that they may, alike, cause or be affected by a psychoneurosis. The endocrine-sympathetic system is merely the lowest level of the whole nervous system, and is inextricably entangled with the other levels. Hence the important influence of the endocrine system on psychical life.

Wright, H. W. CHRONIC INTESTINAL AMEBIASIS. CLINICAL ASPECTS WITH SPECIAL REFERENCE TO NEUROPSYCHIATRIC MANIFESTATIONS. [Am. Archives of Neur. and Psych., X, 226.]

Twenty-five patients with intestinal amebiasis, referred for neuropsychiatric examination, revealed the following syndromes in order of frequency: (1) Neurasthenic syndrome with mental depression; (2) toxic syndrome with myocardial irritability simulating hyperthyroidism; (3) polyneuritic syndrome; and (4) arthritic syndrome with reflex nerve pains and deposits in the foramina of the vertebræ. All of the patients presented gastrointestinal syndromes characterized by poor appetite, flatulence and chronic constipation, with occasional diarrhea. While other factors than intestinal infection may have contributed to some of the symptoms found in these patients, there was enough uniformity of symptoms and signs to warrant calling attention to intestinal amebiasis as a factor in chronic illness of the "neurasthenic" type.

Balassa, L. PSYCHIC DEAFNESS. [Ztschr. f. Nervhkl., Vol. LXXVII, Nos. 1-6.]

Balassa describes a psychic deafness which followed typhus exanthematicus. The tonal quality was lost from tones with loss of ability to recognize vowels. The distinction of sounds was not fine enough to permit recognition of consonants. The literal paraphasia was attributed to absence of control of the hearing.

Marx, E. PSYCHOGENESIS AND PSYCHOTHERAPY IN BRONCHIAL ASTHMA. [D. med. Wschr., Vol. 49, No. 14.]

The author acknowledges a belief in the psychogenic origin of certain forms of asthma on the ground of a large amount of material in which the asthma has been treated psychotherapeutically. He disagrees with a faulty conception of the Freudian theory of sexual trauma as a causative factor but believes that some sort of a disturbance in the respiratory passages precedes the first attack, bronchitis, pneumonia, bronchial dis-

turbance, nasal affection, etc., and that this in turn produces a readiness for the convulsive attack. If then the disturbance occurs again in the respiratory passages the asthma arises exogenously or endogenously through stimulation of the convulsive centers. Thus therapy may be applied to removal of the objective disturbance of the respiratory passages on the one hand and on the other hand to reducing the stimulability by psychotherapy or by judicious hypnosis.

Abraham, K. FEMALE CASTRATION COMPLEX. [Int. Jl. Ps., Vol. III, No. 1.]

The psychological phenomena which we ascribe to the so-called castration complex of the female are so numerous and multiform that even a detailed description cannot do full justice to them. These questions are made still more complicated by their relations to biological and to physiological processes. This present study, the author tells us, does not pretend to cover the entire field. He would limit his discussion to a psychological consideration of clinical material.

Many women, he says, suffer temporarily or continuously during childhood or later from the fact that they were born female. The wish to be male constantly appears in dreams and in neurotic symptoms and appears so often as to warrant the generalization of its universality. This wish often is conscious but not infrequently it remains unperceived. The explanation so frequently given for this desire to be a male are usually rationalizations. Thus the real or underlying motives are concealed. The inability to repress with sublimation the feeling of being at a disadvantage with the boy by the poverty of external genitals therefore gives rise to strong charges of libido which must find some expression. Out of this there arises a typical castration complex in which the female genital is treated as a wound. This wounding is often projected towards the male as its author, hence the frequent impulse to castrate the male.

With the discovery of the male genitals the girl's narcissism is injured. In this period every child holds to its own and covets what others have. Envy arises and is made up of two components at least, a hostile feeling towards the possessor, and an impulse to rob it of its possessions. This is a primary phase of a sadistic anal erotism. The child is often told it will have what it envies when it grows up; but a phallus, of her own, she can never have promised to her; she must later reconcile herself to the fact of her physical "defect," and to her female sexual rôle. If she can gain pleasure from her genitals in this early stage the renunciation is apparently easier. Barring this autoerotic manifestation the adjustment is not so simple. Abraham sketches the pathway it frequently takes through the initial association between defecation and the child's notion of it as a gift of parts of its own body: movements = gift = penis and to this the idea of procreation, the child, is often added. Furthermore, the complex is again influenced by menstua-

tion and defloration (wounds). From these many sided determinations it is recognizable why traces of the castration complex should be quite universal in women. Often seen in mild degrees, at times marked pathological expressions are observed. To these latter the author would devote some attention.

In doing so he first calls attention to Freud's analysis of the "Taboo of Virginity." Defloration must first be carried out by the priest, a displacement to avoid the ambivalent hatred towards the husband who might have deflowered her. This reaction (varying in degree) in human marriage relations is well known to any real observer. Abraham gives some examples. Psa. shows that the reaction has a legitimate placing in the evolution of the marriage relation. Although the retaliation is referred to the acute event of defloration, it is referred back to the injustice suffered at the hands of the father in not having given the gift of gifts, the penis. She acts aggressively toward the husband (strangling, etc.) in revenge for the father's omission. A group of women are unable to break through the repression in this "archaic" sense. They advance only as far as the homosexual phase. They adopt the male rôle with other women. Professional careers, intellectual occupations, male characteristics, attitudes, etc., may reflect in minor degrees this same homosexual component in its masculine accentuation. In the women's movement of to-day this type of expression is quite apparent.

The neurotic transformations of the castration complex in women the author divides into two groups. In the one there is a strong emotionally toned, but not conscious, desire to adopt the male rôle, *i.e.*, on the basis of the phantasy of possessing a male organ. In the second group the phenomena expressed show the rejection of the female rôle and the repressed desire for revenge of the favored male sex. Intermediary forms are so frequent as to forbid making a formal classification. The types mentioned represent only the ambivalent possibilities of expression of the phenomena. Thus the "wish fulfilling" and "revenge" types may be so labelled in accordance with the relative preponderance of the underlying mixed mechanisms. These appear chiefly in the aggressive homosexual and revenge types. Their negative, repressed, ambivalents are also to be found, but more subtly disguised. The mechanisms of the "wish-fulfillment" type are seen in neurotic phantasies of the possession of a penis, being a female napoleon ("Winnie and the Wolves" of the *Saturday Evening Post*. Abstracter's reference) and very frequently in the dream life of the female. Abraham gives some examples. The author states that enuresis nocturna, among other determiners, has this castration complex. Women with this symptom often resist the acceptance of the female functions. This is also manifested in the "wetting" of the man during intercourse, especially when they take the male position.

Other parts of the body, by displacement, take in the erotic stimulus. The nose swells, the eyes become congested. The idea of the "fixed

stare" has in many instances the connotation of an erection. (One patient seen by the abstracter in his opinion developed "progressive myopia" as a resultant of this homosexual sadistic, "I want to be a man, and have a penis" mechanism). Abraham makes a pertinent comment on a related phenomenon (p. 14) and further (p. 15) states that a great multiplicity of symptoms may be referred to this group. Not the least insignificant of these are the anal erotic enema taking ceremonials of both orthodox medical practice and the "Oom Paul" devotees. (See Berkeley Owen's paper on the "Anal Erotic in the Hindu Religions"—previously abstracted.) The author calls attention to the "my child" attitude of many women. "They can do it alone." "Immaculate conception" is the "archaic" component. The "anal-erotism" is here well exemplified, and *extreme* "obstinacy" is a well known part of the character make-up of such individuals. Self overestimation is a very striking feature in their make-up.

The author now turns to the "revenge" type. Two tendencies are here observable, even though repressed. These are the longings for revenge on the man, and to take, even by force, his penis from him. *Vaginismus* is one of the forms (the most important, practically) in which this shows itself. "You can't come in"="I take it away from you," in this mechanism. (This has been a frequent mechanism in the author's experience. It is often shown in subtle form in virginal old maids [servants] behind the symptomatic act of hiding all forms of receivers—ash trays, etc.)

Kleptomania, in some of its forms, has this determiner. (In the same form, such servants, *lose things*, put them in *out of the way places* where their mistresses cannot find them; "they steal from their mistresses, in *unconscious phantasy*, the "unconsciously" *longed for penis of the husband*.) Abraham shows very pertinently how, in dreams, the castration wish shows itself in "being run over," "losing a leg," "an arm," etc. Anxiety ideas about similar deprivations often have a similar motivation. Certain women are attracted to *maimed individuals* from a related motivation. The *mutilated man* has a special attraction because he has lost what the woman (symbolically) envies, *i.e.*, a "penis," "a leg," "an arm," "a finger," "blindness" (the enchanted cottage), etc. The attraction of some gentle women for the Jew (circumcized or other "inferior") can be hereby understood. A further motivation for some cases of "frigidity" on the part of the female, as a piece of unconscious tactics, is elucidated by the author. (1) I rob you of what you lack because I lack it. (2) I rob you of nothing; I even promise you what I have to give. (3) I do not give you what I have promised.

Here the unconscious motive to dominate, by disappointing the male partner, is manifest. The male, by his "precipitate ejaculation," is the ambivalent analogue of the "female's frigidity."

The frigid woman (relatively expressed) is a widespread expression.

Actual anesthesia (denial) is rare, but relative disinterest is frequent. Contact is perceived, but its pleasurable connotation—arrival at orgasm—is absent. The normal positive reaction to the male activity, as an absolute affirmation, is lacking. They immediately turn, after a very brief affirmation, to a complete negation of the entire procedure. Only with conception is a positive yes to the act given. The child is the "gift," *i.e.*, the granting of the denied organ, *i.e.*, the penis. The wound is now healed. The child is the recompense. The negative form is revealed in the conceiving female. They remain male. They will not (unconsciously) be female and have children. The man must be humiliated. They will not have children. Abraham gives an example (paralleled by many analytical experiences) wherein the woman, forced by a quarrel with the male to give in, foregoes her frigidity, and reveals the conscious and unconscious prostitution of the women. Frigidity is a necessary condition of the prostitute behavior. The male, as well as the female Don Juan, must constantly change the love object. The male avenges himself, on all women, for his primary disappointment, and the female avenges herself on every man for the gift she had expected from her father and did not receive. "Her frigidity signifies a humiliation of all men and therefore a mass castration in the sense of her unconscious; her whole life is given up to this tendency."

The author next develops the theme that the frigid woman unconsciously strives to diminish the importance of that part of the body denied her; there is another form of refusal of the man which strives for the same aim with the opposite means. In this form of refusal the man is nothing else than a sex organ and therefore consists only of coarse sensations. The man is an inferior being on account of his possession of a penis. This is at the same time overestimated and depreciated. This depreciation of the male organ signifies a progressive sexual regression and means the humiliation of the male as a whole. Thus certain neurotic women instinctively avoid the really masculine male. They seek the passive and effeminate male and by living with them daily renew their proof of their superiority. They will not accept the help of the male.

A still greater or extreme form of sensitiveness relative to the castration complex is seen in certain cases of psychical repression of the female sex. These women say they are useless. Man is so superior, women are of no value in the world. All situations in life, spring, flowers, fruit, birth, children, these are hated, or disgusting. Winter, snow, coldness, death, these are the only valuable things in life. All, or any, wounds, accidents, sicknesses, operations, etc., are unbearable. Such things make "cripples"; such are unconscious reminders of "castration."

Finally the author deals with the "compromise formations." "If I were this or that," "the most beautiful woman." Then I could show the man, the world; then I could give them the merry ha ha—"turn

the cold shoulder." This is the sublime expression of the castration phantasy. The extreme female situation is rarely seen, but lesser degrees are frequent. "I will keep him guessing" is the most frequent form of compromise. Among the more striking, but by no means, statistically speaking, expressions of the castration phantasy, are the displacements of the complex to the children. Such females seek to influence their *daughters* by disparaging either the female sexual activities, or by giving them the feelings of aversion to men. They thus seek to undermine the more normal heterosexual trends in their own daughters. They emphasize, in various ways, the disgusting features of relations to men. They not only seek to poison the daughters, but also their sons. They seek to displace the erogenous interests of their boys from the genital to the anal regions. They fondle their buttocks, spank their behinds, even kiss them, unconsciously, to depreciate the value of the supremacy of the genital zones; they seek to make their boys sodomists, and, in the carrying out of their own revenge motives to the husbands (males), make women of their sons. That such hateful activities are possible seems odious to the average individual, but that such are possible evolutions of the castration complex in women psychoanalytic investigation shows are not only possible but by no means infrequent. [J.]

Forel. MASOCHISM AND KLEPTOMANIA. [Schweiz. Arch. f. Neur. u. Psych., Vol. XII, No. 1, 1923.]

Forel combats the common idea that masochism does not lead to conflict with the law by publishing a case in which kleptomania was the unconsciously chosen means for engaging in such conflict. Masochism was the driving force, kleptomania the means and sexual satisfaction the goal, all upon a hysterical basis.

Giese, H. "DEPERSONALIZATION." [Ztschr. f. d. ges. Neur. u. Psych., Vol. LXXXI, Nos. 1, 2.]

The author has advanced certain psychological theories and presented physiopathological grounds and matters of differential diagnosis in connection with 4 very interesting cases which he has observed carefully. He considers one a depersonalization neurosis and the others as manic-depressive cases, the clinical pictures of which have a specific coloring, absence or withdrawal of objective inhibition, far-reaching susceptibility to influence. In his attempt at genetic psychological interpretation the author denies an essential significance to the Freudian mechanisms. He prefers to explain depersonalization rather as conditioned upon the biological construction than as of psychological origin.

Berkeley-Hill, O. ANAL-EROTIC FACTOR IN THE RELIGION, PHILOSOPHY AND CHARACTER OF THE HINDU. [Int. Jl. Ps., Vol. II, Parts 3-4.]

"No one who has made even a superficial study of the customs of the Hindus, still less any one who has come into actual contact with them

in India, can fail to be impressed with the length and depth to which ideas of "defilement" have come to permeate their existence. Ceremonial "purifications" of all descriptions have played, and continue to play, important parts in the daily routine of mankind throughout the world, but it is unlikely that among any people at any time in the history of the human race has either the desire for the avoidance of contact with "impurity" as well as the desire to remove the minutest trace of any such impure contact risen to be such an overwhelming obsession as it has done among the Hindus." This general situation affords the author, he believes, an excellent foundation for the study of sublimations of, or reaction formations against, anal-erotic impulses. The general outline as laid down by Freud is followed and the author would apply the principles to the Hindu cosmogony and the character-complexes of the "Hindu." He begins with "caste." At its very foundation lies the "pollution complex." A class of "untouchables," the outcasts, thus gets "shut out in their filth and in their poverty." The author goes back into the history of the Hindu religions and philosophies to show how this system arose. In the gods of the Vedas, Agni, Indra and Surya, associates with the "flatus" complex are quite evident. The author utilizes Jones' penetrating analysis of the Holy Conception showing the analogies with Kunti the wife of Surya, the Sun God who gave birth to Karna through the ear. The singing chants of certain liturgies are very characteristically related to the same "flatus complex." In Yoga, and asceticism in general another anal-erotic type-complex shows itself. Here the control of the sphincter plays a large rôle in infantile power complex. Thus in the asanas or postures, 84 in number, one can see the chief features of the complex. Perineum pressure is an integral part of the most important of these, and breath exercises are really efforts to direct flatus into a most elaborate quasi-philosophical system. The object is purification. In Brahmanism, the flatus complex masquerades as a metaphysical spirit "Atman." In the excessive ritualism of Brahmanism the classical pedantic-compulsive anal-erotic component is evident. In philosophical Brahmanism, the Upanishads, the purity-impurity accents regarding the body and its formation again point to the anal-erotic component. The author discusses then other aspects of the religion—the *time* periods, "thousands" of golden ages, "millions" of swargas and "ten million" royal deities; this great propensity to juggle with enormous arithmetical quantities—these he very clearly relates to the plastic moulding capacities of the early anal activities. In the laws of Manu, oughtness, mustness, duty, and the whole of life's ceremonies lived according to a rigid-pedantic plan with the thousands of rules, these all are strongly pervaded with the anal-erotic sublimation and reaction formations. Thus 23 rigid rules attend an act of defecation: ten for the cleaning of the teeth, and thus the ceremonials have been built up with a rich collection of reaction-formations about cleanliness—"inside and out." Only a

compulsion neurosis can equal these interesting orthodox activities. The "Omnipotence of thought" is continually coming into view and the author shows precise parallels in the religious ceremonials with Ferenczi's keen outline of infantile developmental phases—Omnipotence by magic gestures, Ferenczi's third stage, is recognizable in many ways.

The author now turns to character and temperament traits, making use of Jones' study of the keeping back and producing aspects of the anal-erotism. Parsimony as a characteristic character trait of anal-erotic origin is seen to perfection in the niggardly, avaricious Hindu. Kipling in his "From Sea to Sea" gives an inimitable picture of this hoarding trend. The passionate tenderness to symbolic objects, especially children, as Jones vouches for, is another of the anal-erotic manifestations particularly emphasized among the Hindus. Children and feces are quite plainly and symbolically collated in many of the myths. The birth of Ganesh from the feces of his mother, being one cited. Fecal charms to cure sterility are widely employed. The pedantry and orderly ritualistic ceremonial is another of the classical anal-erotic traits in its retaining aspect. Various spattering, staining impulses are frequent by acids, chemicals, dyes, etc., and show the positive aspects of Jones' giving out types. Again the great passion for moulding—brass, etc.—has been a Hindu trait for centuries. "Oppressive confusion of ornament with an insensate distortion of the human figure"; this is a strongly accented character trait of anal-erotic origin. The actual filthiness and ragged improvidence of the Hindu is a striking ambivalent to the ritual of cleanliness. The Hindu is greatly shunned, the author states, because of the unconscious antagonism to their many anal-erotic manifestations. In Jones' masterly summary of the advantages and disadvantages of the evolutions of the anal-erotic traits, the author states the Hindu has all the disadvantageous ones—irritability, bad temper, unhappiness, hypochondria, miserliness, meanness, pettiness, slow mindedness, tendency to bore, the bent for tyrannizing, and dictating and obstinacy. All these the author shows the Hindu possesses in great measure in a most convincing manner. [J.]

Haecker and Ziehen. HEREDITARY TRANSMISSION OF TALENT FOR MUSIC.
[Berlin Letter, J. A. M. A., Vol. 81, Apr. 21.]

Up to the present time, very little statistical evidence has been collected bearing on the question of hereditary transmission of talent for music. To be sure, a survey of the family history of famous musicians sometimes permits the recognition of general hereditary principles, but the extensive statistical material which is needed for the solution of the problem, owing to the fact that experimentation, is impossible, is entirely lacking. In view of this fact, a new book by the Halle Professors Haecker and Ziehen must be regarded as especially significant. Haecker is an instructor in the field of mechanics, and Ziehen is a psychologist. The new work deals in a scientific, statistical manner with the hereditary transmission and the development of talent for music. By means of ample question-

naires, they investigated the family histories of several thousand persons, gleaning all the data possible pertaining to talent for music. They do not claim that their data are absolutely reliable in all respects, but they give the results of their investigations for what they may be worth.

In marriages in which one of the parents is musical and the other is not, marked musical talent is found more frequently in the male offspring than in the female; this is especially true if it is the mother, rather than the father, who is musical. In such mixed or discordant marriages the positive load seems more effective than the negative. They found that the transmission of talent for music follows the mendelian laws of heredity. In so-called concordant marriages; that is, in which both parents are musical, about 40 per cent of the spring have marked talent for music, and almost a further 40 per cent are musical. But there are also offspring (which finding agrees with common practical experience) that have little talent for music and some that have virtually no talent at all. This finding is not at all surprising when we examine into long lines of inheritance. Two main deductions may be drawn from the statistics. Male offspring are, in general, somewhat more susceptible to an hereditary bent than are female offspring, and an hereditary bent derived from the mother's side is, in general, somewhat stronger than on the father's side. The development of talent for music shows two peaks. In persons with marked talent for music, their special gift often shows itself before the end of the second year; especially is this true if the talent is inherited. Musical talent in children is usually discovered more readily and earlier in case the parents are musical than is otherwise the case. In an environment given to music, musical talent is more readily discovered. The statement was frequently made that talent for music in the form of correct singing appeared in a child before it began to talk. Shortly before puberty, talent for music often comes out more strongly and is more likely to attract attention. It is remarkable to note that of forty-six composers, whose statements may be relied on, thirteen, or 28 per cent, had no opportunity to hear music in their younger days, which shows that talent for musical composition may develop independent of musical stimulation in childhood.

Haecker and Ziehen were unable to demonstrate with the statistical material at their disposal that there is any definite correlation between talent for music and talent for mathematics. The percentage of males who, lacking in talent for music, have a talent for mathematics is surprisingly high, so that one is almost tempted to assume that the presence of the one talent compensates for the absence of the other. Further evidence for this assumption is found in the fact that, among males with marked talent for music, only a small percentage have talent for mathematics. In males, according to the material on which the research was made, there seemed to be a correlation between talent for music and talent for drawing, and an even greater correlation between talent for music and poetic

talent. In females these correlations are not well marked, but receptive talent for drawing appears to predominate over poetic talent.

Wright, Jonathan. MIRACULOUS HERBS. [N. Y. Med. Jl., June 20, Vol. 119.]

The author desires to lay great emphasis on the psychological problem of the belief in drugs. It is known to all how this in the last generation or two declined not only as entertained by the medical profession but as to the public only in a less marked degree. It has long been said that those drugs which in any way alleviate, much less cure, the ills of man are very few. As to the others, which the more skeptical exclude from this last belief, varies with individuals, both professional and lay, doubtless in direct relationship with inborn more than acquired individual idiosyncrasies. It is not so much on this matter of individual credulity, which we know has varied in every age and in every race, but on the phenomena which stand forth in the history of thought as to a whole race or a whole civilization observed for a long period, that the author desires in this article to lay the most stress. He goes on to say:

I have often before insisted on the similarity in the facts or proof on which men rest their beliefs, but here I repeat it, to insist that whether the medicine man practices with a *materia medica* arranged on magical or bacteriological lines the drug or the herb is there for his use, and if it was once revered more than it is now or in China more than it is in New York, it is because the system on which its administration is based is worthy in the eyes of ancient or Chinese mankind of more reverence than other explanations vouchsafed at other points of time and space. Now this is a state of mind. It is just as much an objective phenomenon as the castor oil plant. I do not urge that bacteriologists have solved all the questions of etiology, but the culture out of which bacteriology sprang is here confronted by a psychological problem which demands from history and ethnology an explanation which is not forthcoming. Why did the bushman or the Chinaman think thus? Ignorance? We, in detached moments, acknowledged we are ignorant enough. We congratulate ourselves, when in another, a vaunting mood, that we have pulled ourselves bodily out of many of the devious mental channels, along which the primitive man paddled his canoe, but we still float on the broad bosom of the sea of uncritical credulity.

It is not of consequence whether it is vaccines in 1912 or dry drugs curing moist diseases under the humoral theory of 215 A.D. If the drug does not fall into line with the bacteriological or humoral theory of the etiology of disease it is no longer thought to cure or alleviate, that is to say, of course, if it does not belong to the few alluded to above. Though satisfactory as far as it goes, this explanation does not suffice to elucidate the whole problem. It may be studied in the light of such history of thought as is accessible to us, with the help of such further

light as ethnology can lend to modern psychology. A study well worth reading throughout.

Poppelreuter, W. PSYCHOLOGY AND PATHOLOGY OF OPTIC PERCEPTION. [Zschr. f. d. ges. Neur. u. Psych., Vol. LXXXIII.]

Poppelreuter presents a very interesting study of optic perception in which he disagrees with Goldstein and Gelb, who defined their case as apperceptive psychic blindness. He brings forward a large amount of material to show that quite similar phenomena can be brought about by perimacular amblyopia. He concludes that the optic system is built up and destroyed through different stages. Vision of the lowest grade reveals loss of perception of color, size, form, movement, direction, etc. Only brightness is registered. In another grade probably size and direction are perceived but no true form, in another size but not plurality of forms, in another still no movement is perceived, then in the last grade the higher distinction of form is made.

Wenger, E. ATTENTION AND COMPREHENSION WITH THE PSYCHICALLY ILL. [Zschr. f. d. ges. Neur. u. Psych., Vol. 82.]

Wenger reports further investigations such as those carried out by Trüb with Ranschburg's mnemometer. He attests the usefulness of the method but believes it needs simplification. The senile, as he points out, are not able to increase qualitatively their capacity for comprehension through straining of attention. Their habitual attention corresponds to their conceptual ability. This method of procedure makes it possible to establish objectively improvement in their attention and comprehension in organic diseases.

Freud, S. FEMALE HOMOSEXUALITY. [Int. Zeit. f. Psa., Vol. VI, No. 1.]

An English translation of this article was published in the *International Journal for Psycho-Analysis*, Vol. I, No. 2 and a review of the English article appeared in the *Psychoanalytic Review*, Vol. IX, No. 4, p. 28. For this reason only a brief summary is given here. Freud, after calling attention to the fact that homosexuality in women has hitherto been given little attention in psychoanalytic literature, analyzes a case which came to his attention. A girl, eighteen years of age, became strongly attracted to women of doubtful reputation, to the exclusion of all other interests. Her infatuation finally led to an attempt at suicide. Freud found the psychological motive of these abnormal conditions to be an unconscious desire on the part of the girl for revenge on the father, or, otherwise expressed, an overreaction to a father fixation. Facts in the history of the girl (love for a boy in early childhood and love for a brother born after the girl had attained puberty) revealed a heterosexual foundation for the homosexuality. There had been a strong fixation of affection on the father, but when repulsed she defied him (ambivalent reaction).

The result of this was her final homosexual attitude. She excluded men from the field of interest—a repudiation, rejection of the unattainable. Thus, Freud states, the source of homosexuality in the female is found to be the same as in the male, with the sexual signs of the object reversed, *i.e.*, in the edipus complex. It was impossible for Freud to successfully treat this case owing to complications in the transference. Freud became the father substitute and hence complete transference was impossible, the patient's attitude being generally negative. He advised that the girl should be turned over to a woman analyst. The problem of homosexuality generally is discussed and among other points the following are touched upon: the constitutional homosexuality as distinguished from acquired; the distinction between the inverted choice of the object and the inverted attitude in the subject; psychical hermaphroditism and the presence of secondary characteristics of the opposite sex; and the relation of these conditions to the psychology of inversion. In conclusion Freud refers to the work of Hirschfeld and of Steinach on the genital glands, stating that psychoanalysis cannot solve the problem of homosexuality, as the definition of the terms "masculine" and "feminine" must first of all be determined by biology.

Abraham, K. THE NARCISSISTIC VALUATION OF EXCRETORY PROCESSES. IN DREAM AND NEUROSES. [Int. Zeit. f. Ps., Vol. VI, No. 1.]

From various dreams and examples of behavior of insane and of children Abraham seeks to make clear the connection between the anal and urinary excretory processes and the primitive developmental attitudes. Psychoanalytic research demonstrates that great value is ascribed by the unconscious to excretory products; the excretory processes are also overestimated in a similar manner. In illustration of this tendency Abraham cites the sadistic dream of a woman in which her family, including parents and brother, were destroyed by "wind and water" (feces); and also the dream of a boy of eleven, who identified himself with his mother after witnessing parental coitus, and who suffered from neurotic disturbances of the defecatory function. The boy dreamed that he was passing out the whole universe from his anus. Abraham calls attention to the fact that in these phantasies omnipotence is ascribed to the functions of excretion, permitting them to be placed in parallel with the all-powerfulness of thought, the latter being a later development from the primordial idea of the omnipotence of the excretory processes. As to the connection of sadism with these functions Abraham calls attention to the similarity in behavior and mimic of children in an access of rage and in the act of defecation; and to the fact that in neurotics an explosive movement of the bowels is frequently a substitute for an outbreak of rage. Mythological support of this view of phantasies of omnipotence Abraham finds in the story of creation. According to one version man was made of earth (excrement). Another version relates that all was created (inclusive of man) by the word or will, that is by all powerful thought.

Neumann, W. A CASE OF CLAIRVOYANCE. [Schweiz. med. Woch., LIV, March 6.]

This author adopts Richet's standpoint that psychologists and psychiatrists ought to learn something more about the phenomena of parapsychology, namely, the problems of telekinesis, telesthesia and telepathy whereas the shoe is on the other foot, since it is the psychical researcher who knows nothing of psychiatry. He attempts to show in a case, very well controlled by a scientific committee, that neither conscious nor subconscious deceit or fallacy interfered with telesthesia.

Odier, C. PSYCHOANALYSIS. [Rev. Med. Suisse Rom., Feb. 1924, J. A. M. A.]

Odier, as has many another, protests against the indiscriminate use of psychanalysis, as liable to do harm when applied outside of the proper indications. Therefore, it is of foremost importance to outline proper contraindications and indications for it. Thus, he says, it does not seem to be available in narcissistic neuroses; in kleptomania; in fantastic pseudologia; in simple neurasthenia; anxiety neuroses; traumatic neuroses; hypochondria; any psychoneurotic case in persons over 50 or with low-grade mentality, and, finally, when the patient is antagonistic. He lists the indications as compulsion neuroses; obsessions; classic hysteria; phobias; social maladjustments; doubt neuroses; perversions; ejaculatio praecox; dysmenorrhea; frigidity; vaginism; onanism; enuresis; somnambulism; night-frights; emotional character defects of children; esophago-gastro-intestinal neuroses, and, finally, alcohol addiction. One important acquisition from analysis in psychiatry is that it has yielded an attempt at deciphering and translating the unconsciously symbolic language used by the insane.

Coriat, I. H. ACTIVE THERAPY IN PSYCHO-ANALYSIS. [Psychoanalytic Review, Vol. II, January, p. 28.]

This paper deals with the new development in psychoanalytic technique which Ferenczi has termed "active therapy." This active interference of the physician at a certain stage in the analysis involves the ability to recognize the right time and the right method. The whole subject is considered in detail and illustrative cases are cited. Active interference must be cautiously employed lest the patient's resistance be increased, but in some cases it is actually to the patient's interest that the tension and discomfort due to the neurosis should be increased, so that he may be stimulated to overcome resistances which act as barriers to an outlet for repressed material. The neurosis then ceases to be a source of pleasure and a means of escape from unbearable reality. The purpose of active therapy is the stirring up of unconscious material, and it must not go beyond prohibiting something which gives the patient comfort or pleasure.

BOOK REVIEWS

Head, Henry. APHASIA AND KINDRED DISORDERS OF SPEECH. Two Volumes. [Cambridge, at the University Press.]

These two magnificent volumes may well be said to crown the life work of this veteran neurologist. They are majestic in proportion, replete with fine discriminative work and beautiful in execution.

Nowhere can one find so full and so fair an historical résumé as that to be found in the seven opening chapters of Part I of Volume I. In a broad comprehensive and penetrating manner Head leads us from the Schoolmen to Gall, Bouillard to Broca, Hughlings Jackson, The Diagram Makers, Marie the Iconoclast, to Chaos and closes with a superb retrospect of the ground gone over.

In his preface the author tells us of his first aphasia enthusiasms some forty years ago and how many years later through the influence of Jackson's work an entire rearrangement of his points of view took place. From this time on he has elaborated a series of tests that are to be found also in Volume I, and which have led him to his position here outlined. A position which comes as a culmination of his own studies and of a masterly grasp of the work of his predecessors for at least a century. This historical introduction is unique in that Head has kept in mind throughout the goal of his own researches thus giving to what might be only a historical summary, a critical examination as rare as it is profound. Moreover there is a charm in the delightful writing which accompanies and enhances its thoroughness and its well balanced proportions.

In Part II, Chapter 1 and 2, is given in great detail, with illustrative clinical material, the entire series of tests which Head has utilized now for some years and which has afforded him the data about which he has formulated his original and newer views.

He then proceeds to a discussion of the nature of the disturbances of function in aphasia and kindred disorders of speech. "They cannot be classified as affections of speaking, reading or writing"; "the 'motor' aspect of these disorders of language is not due to a pure 'anarthria'; these disorders of language cannot be classified as 'motor' or 'sensory.'" These are the main theses of this discussion. The chief pathological features may be grouped under the descriptive phrase functional modification of "symbolic formulation and expression," by which phrase is understood a mode of behavior in which verbal or other symbol plays a part between the initiation and execution of an act. This comprises many procedures, not usually included under the heading of the use of language. The exact limits are not definable, but the functions of words, numbers and other symbols are most profoundly involved.

Chapter 4 outlines the diverse clinical manifestations assumed by these defects of symbolic formulation and expression. This leads to a discussion of the "types" which forms the foundation of the newer conceptions. These are "Verbal Defects," "Syntactical Defects," "Nominal Defects" and "Semantic Defects."

Defective *word formation* is the first of these disturbances of symbolic thinking. The patient cannot find the words he requires for ordinary conversation; in the severest forms of the type being reduced "Yes"; "No"; with a few other automatically or emotionally evoked expressions. Some loss of power of writing and want of verbal memory of sentence content usually accompanies such a grave disorder of articulated speech. Many details accompanying this type are amply set forth.

In the second type, *syntactical defects*, the patient talks jargon which is often of great rapidity when once started. The grammatical structure is involved, short jerky sentences are uttered without the necessary connections. Slurring, flatness, modifications, indistinct enunciation, are present. Sometimes "baby talk." Head thinks that these defects in the use of language are not due to imperfect auditory images. They are manifestations of a disturbance in the rhythmic aspect of symbolic formulation and expressions. He prefers the term syntactical to that used by Pick in his memorable study of "agrammatism." They go deeper than grammar.

In "*nominal defects*," the "name" as a pattern which fits the external object or state of things, is the chief disturbance in symbolic formulation and expression. This disorder depends essentially on inability to designate an object in words and to appreciate verbal meaning. All of these patients tend to move the lips silently without uttering a sound, when attempting to repeat a phrase, especially if in doubt. Silent repetition also suffers. The patient may have plenty of words at his command but he is unable to designate familiar objects.

Finally in "*semantic defects*" (*semainein*, to signify) it is the comprehension of the significance of words and phrases as a whole which is primarily disturbed. These patients tend to talk rapidly as if afraid of forgetting what they wanted to say; at times this actually occurs and the conversation tails away endlessly. The fault is essentially a want of recognition of relative significance and intention. The details of verbal repetition, syntax, pronunciation, naming are not disturbed but the general significance is lost or involved. Semantic disorders interfere seriously with the activities of daily life. Only the simplest of acts can be carried out, even if a high order of memory and intelligence are retained. Coördination of details into a comprehensive scheme is defective.

These are the new types erected by the author and elaborated in much greater detail than can be noted in this brief comment.

In Chapter 5 the author quite rightly we think insists that the usual ways of looking at these defects is quite imperfect. The effect

produced by the degree of loss of function on the form assumed by an aphasia varies not only qualitatively, but, of special significance, quantitatively as well. The tendency has all too readily been to erect a "syndrome" and assign a "localization." This static mode of study is quite common, but distinctly incorrect. No account is taken of the dynamic changes and fluctuations which this chapter quite illuminatingly reveals.

To emphasize this aspect an extremely valuable analysis is given of a case of acute verbal aphasia followed through various stages of recovery. Other examples of the changes occurring in other types are similarly analyzed. Other deductions of the relative order in which the various acts of language recover in different forms of aphasia are most valuably set forth. Many patients, however, tend to regress. Head's discussion of the process is most valuable, especially since the phenomena of regression are so universal, and are not by any means bound up with progressive structural alterations.

The absurdity of much of the discussion concerning speaking, reading and writing, in its older settings is well set forth in the following chapter.

Chapter 8 deals with a summary of the results of the clinical examinations. It cannot be summarized further, but must be read.

Part III, Chapter 1 begins with the problem of what is meant by localization of function. Here Head deals with the concept of "centers" especially as they have been all too mechanically interpreted on the basis of electrical stimulation of the motor cortex. He gives us a devastating critique of these extremely crude conceptions with which we are in absolute accord. Still certain "situations" structurally speaking denote certain functional disturbances, if severity and extent are duly taken into consideration. The more definitely the injury destroys the lower portion of the pre- and post-central convolutions and the parts which lie beneath them, the more likely are the defects of speech to assume a "verbal" form. A lesion in the neighborhood of the upper convolutions of the temporal lobe tend to produce "syntactical" disorders. Destruction around about the region of the supramarginal gyrus causes defects in the use of language which he has called semantic; whilst a lesion situated somewhat more posteriorly seems to disturb the power to discover and to understand names or other "nominal" expressions.

Future research, patterned after Head's own careful studies, will determine the value of these generalizations. His final summary of 23 points, pp. 545-545, terminates Vol. I.

Vol. II of approximately 500 pages with extensive bibliography and Index presents the clinical material in great detail upon which the entire work is founded.

To attempt to present any detailed criticism of the vast amount of research here presented in quite beyond the capacity of the present reviewer. All that is necessary to say is that here is a work of transcendent importance which is bound to orient the entire subject of aphasia in quite new and valuable directions.

Baruk, Henri. LES TROUBLES MENTAUX DANS LES TUMEURS CÉRÉBRALES. [G. Doin & Company, Paris. 1926. 394 pp.]

This excellent thesis is based upon a study of 55 cases of brain tumor, of which 41 showed mental symptoms, and in 15 the mental symptoms dominated the clinical picture. Baruk gives a most complete description of the mental symptoms associated with brain tumor and divides them as follows:

A. Mental symptoms common to tumors in divers locations and due to increased intracranial tension.

1. With fully developed pressure syndrome—In these cases mental confusion is the symptom most commonly seen. Usually there is a slowing of all the mental functions, sometimes disorientation in time and space, illusions, fabulation, etc. Delirium is usually absent. The symptoms are quite variable.

2. Premonitory symptomis—Usually a slight depression, anxiety or neurasthenia, before the development of pressure symptoms.

3. Late symptoms—The mental confusion may pass over into veritable dementias, resembling general paralysis, the syndrome of Karsakoff, or senile dementia. Sometimes euphoria and childishness are noted.

B. Mental symptoms particular to certain regions.

1. Frontal lobe and corpus callosum—Mental symptoms are early and may dominate the clinical picture. Confusional states, torpor, and dementias resembling general paralysis are commonly seen. Euphoria, childishness, moria and moral perversions are common also.

2. Infundibular region—Disturbances of sleep, hallucinations of odor and taste, dream states, apathy and psychomotor agitation are the most frequent manifestations.

3. Parieto-temporal region—Visual hallucinations are especially to be noted, both elementary and complex, the latter due principally to temporal tumors. In the left temporal region tumors cause principally agnosia, aphasia and apraxia.

4. Other regions—Tumors of the cerebellum, bulb, pons and ventricles cause mental symptoms largely from intracranial tension.

The author insists particularly that every mental confusion without obvious cause should make one search for signs of intracranial tension. Epileptics also should be scrutinized carefully for signs of tumor. The personal observations of the author are given in detail. There is also an extensive bibliography. The descriptions are clear and concise and the mental symptoms analyzed with great clinical acumen. The work fills a real need and will be consulted with profit by all who are interested in brain tumors or in mental pathology.

PERCIVAL BAILEY.

Ferenczi, Sándor. FURTHER CONTRIBUTIONS TO THE THEORY AND TECHNIQUE OF PSYCHOANALYSIS. [Compiled by John Rickman; authorized translation by J. I. Suttie and others. Hogarth Press, 52 Tavistock Square, and the Institute of Psychoanalysis.]

One compilation of some of the contributions of Dr. Ferenczi has already been presented in English through translation by Dr.

E. Jones. This second brings together practically all of his later works, thus offering in English dress the studies of one of the foremost of Freud's pupils. The International Psychoanalytic Library is enriched by its inclusion.

The author in his preface reminds us that the collection is more or less a medley but adds the wish that even in such a disjointed collection one may find a true picture of the manifold interests which continually occupy the physician who would utilize psychoanalysis.

Two trends are discernable in these papers, both of great interest, the one deals with the elucidation of symptomatic expressions of psychoneurotic phenomena as seen, for instance, in hysteria, tics, and grave organic disease which may be said to be new; the other with matters of much import in psychoanalytic work, namely the technique. Here Ferenczi's ingenuity and originality are shown to great advantage, for advancing experience has pointed to the fact that certain situations arise in therapy which require special adventure.

Ferenczi outlines his position very clearly as to his own experiments in "active therapy," procedures which in their intrinsic character have been operated tentatively by many, but never so clearly set forth as here.

The papers are grouped by Dr. Rickman under the heads of Nosology, Technique, Sexual Theory, From the Nursery, Dreams, Symbolism, Applied Psychoanalysis, Medical Jurisprudence and Religion. A bibliography of Dr. Ferenczi's writings to 1926 completes this valuable collection.

Should anyone doubt the actuality or the virility of the advance in the psychoanalytic movement he has but to read this fascinating collection of papers to be convinced that the seed sown by Freud is yielding a rich harvest.

Prudden, T. Mitchell. BIOGRAPHICAL SKETCHES AND LETTERS.

Edited and Prepared by his sister, **Lillian E. Prudden.** [Yale University Press, New Haven, Conn.]

The writer of this notice has always counted it among his most priceless memories to have come under the influence of this master spirit in pathology. What little he esteems himself to be as a student and sympathetic understander of this aspect of medical science he owes to the encouragement, criticism and help of T. Mitchell Prudden.

Not until he had read this charming account of Prudden's life, as gathered by a loyal and admiring sister, did he know that among his own forbears there was one who in 1638 was among the founders of the New Haven Colony—later to found the community of Guilford and then to move on to found what was to be the city of Newark, New Jersey.

Idle though such borrowings may be from an historic past, for the reviewer, the life and letters of this man stand out as a landmark in the evolution of American medicine and we know of no way by which we may offer our meed of praise than by saying here was a man who set his stamp upon American pathology and gave it a vitality and validity which still endures.

We, "editorially we," may preen ourselves upon our knowledge of the evolution of neuropsychiatry in the United States, but in doing so, we acknowledge our debt to T. Mitchell Prudden, as one who gave us sound principles of observation, *under the microscope*, and wise, even if at times smiling corrections of our exaggerated enthusiasm of what we thought we saw.

Our tribute here is given to this charming guide—his life and letters but affirm our loving allegiance to his memory—and to our readers, we ask an interest in this work.

Kretschmer, Ernst. DER SENSITIVE BEZIEHUNGSWAHN. EIN BEITRAG ZUR PARANOIFRAGE UND ZUR PSYCHIATRISCHE CHARAKTERLEHRE. Zweite verbesserte und vermehrte Auflage. [Verlag von Julius Springer, Berlin.]

In our review of the first edition of this work (JOURNAL OF NERVOUS AND MENTAL DISEASE, Vol. 52, 1920, p. 461), as we now reread it, we fell we were somewhat severe in our criticism. Whereas some comfort may be taken for the same in that the author himself writes in his introduction to this second edition that he has altered its dogmatism somewhat, has made it more elastic, less sharp and categorical—which were the faults we ourselves found in the earlier edition, yet we confess we did not do it full justice as a real contribution looking towards a better delineation and delimitation of a large group of individuals in the community who have "paranoid trends."

Whereas we still feel that "type" constructions are largely fictions, and that an enormous interplay of biological forces renders futile all efforts at such abstract "outlinings," we are not entirely out of sympathy with the author's very important additions of "character type" observational data as offering some help to a better understanding of those aspects of maladaptation which in the large, may be termed "paranoid." Nor are we altogether disposed to admit that many so-called paranoid activities are necessarily pathological, for even a short historical perspective has served to show that nearly all invention, genius, new conceptional attitudes in the mental sphere, have been met by the criticism on the part of the conservative inertness of mankind as "paranoid." This makes this study all the more significant since Kretschmer himself is not altogether unaware of this important consideration, especially in this new edition.

In one respect we feel the author has made a distinct advance over his previous formulations. He here recognizes more fully the significance of the "reproductive instinct" in the unfolding of the phenomena which are brought under review, thus admitting more freely his sympathy with the conceptions of Freud and Bleuler as important for the unravelling of the complicated factors in this general grouping.

We hold our judgment in suspension whether an "inferior sexual constitution" is of more significance in the production of the situations under consideration, or whether the strictly Freudian concep-

tion of "fixation of libido at infantile levels," causes the so-called "constitutional" factors. In saying this we are reminded of the findings of Mott, Lewis and others relative to gonadal alterations in certain schizophrenics. Mott would claim that the somatic (*i.e.*, constitutional inferiority) was a *cause*; we, on the other hand, claim that atrophied gonads are the *result* of introversion of libidinal activities, in the Freudian sense. Where the accent will be placed ultimately we do not presume to prophesy. We only bet on the "purpose" side of the proposition, rather than on the "structural alteration."

In short Kretschmer here gives us one of the most enlightened discussions of the paranoia problem from the "type" side known to us. It is most scholarly and we recommend it most highly.

Breckinridge, Sophonisba P. PUBLIC WELFARE ADMINISTRATION IN THE UNITED STATES. [The University of Chicago Press, Chicago, Ill. \$4.50.]

"Social Work" is a slogan that *means* much more than it *sounds* in the United States in spite of the deaf ears of politicians. The data are being accumulated which will force administrators to reckon with enlightened public opinion rather than with hopeful support from the ignorant proletariat.

Sociology is to be reckoned as one of the most complex of the mental sciences. It needs data, and data, and then some more, before formulations of value can be utilized. The field of public administration is unquestionably one of the most important and this volume is an initial one hopeful of offering something of service.

Here is no place to tell what this book contains, in detail. It would require a reprint of the book itself. It gives us a systematic survey of what has been attempted.

Chronologically the materials fall into three periods: before 1863, when the first board of state charities was created; between 1863 and 1917, when the first department of public welfare was established; and from 1917 to the present.

In collecting the documents an attempt has been made to follow the general course of development in so far as it can be determined; to set forth the principles of treatment which should be applied; and the special problems which retard progress.

These materials have been tested for the past five years with classes in the Graduate School of Social Service Administration of the University of Chicago. This book is admirably planned to serve as an introduction to one of the most important groups of problems confronting the social worker in the United States to-day.

Wexberg, Erwin. YOUR NERVOUS CHILD. Translated by W. B. Wolfe. [Albert and Charles Boni, New York.]

Nervousness in childhood is by no means the negligible factor that a widespread laissez-faire attitude assumes it to be, and any sound contribution to its understanding is welcome.

The indolent physician, pediatrician or pedagogic attempts to comfort the parent by saying "he will grow out of it." In a certain sense this is true, fortunately, but from a deeper view this is rarely ever the fact, for the nervous child carries into adult life certain distorted adjustments which while not necessarily showing overt signs of disease, nevertheless offer certain character anomalies, not infrequently very hampering to the individual and to society.

The present volume would offer some light upon the problem from the Adlerian viewpoint of "organ inferiority" and its ego overcompensation. While this viewpoint has some validity, it is really a superficial one and does not get at the most important of all of man's instincts, *i.e.*, the biological one of racial continuance. The Adlerian view is Marxian (*i.e.*, economic), communistic, and egotistical. This is less than 50 per cent of the situation, but it has some validity. True prophylaxis however is not found in this minor proposition—but it can be emphasized as it is in this work to some advantage.

There are a lot of excellent ideas in this work. Most of them have been known for centuries. Our only objection to it is that it sidetracks the most subtle of the factors involved—namely, the sexual factors. Inasmuch as mankind in general wishes to taboo such factors, this work makes a spurious appeal in ducking these factors and attributes the whole situation to the desire to master. True to its "leit motif" the book is bound in yellow.

Neuer, Alexander. MUT UND ENTMUTIGUNG. Heft 3. INDIVIDUUM UND GEMEINSCHAFT. [Verlag J. F. Bergmann, München.]

As subtitle the author entitles this the principles of the psychology of Alfred Adler's. They have the object we are told that before Adler there was no such thing as psychology in its true sense. This intrigues one since Adler first utilized the Freudian concepts and then set up his own shop filled with the "Ego."

In the first place we learn that Adler has a "system." We recall that Freud has frequently stated he is not interested in "systems." Such constructions, as Bergson has reminded us, are dead, when formulated.

The specific idea upon which the Adler system is constructed, according to the author, is "Entmutigung," to which this system gives a specific meaning. "Overcompensation," an idea as old as the hills, is claimed to be Adler's special discovery. It is the biological way of adaptation to the "inferiority."

And so on and so forth, a setting forward of axiomatic postulates known for centuries, all set down to the "genius" of Adler. "Teleology," from Aristotle; "Unity of the Organism," from Heraclitus; the old Platonic universals and individuals, and finally Lamarck's "Slow thinking of the animals," as a principle in evolution, these are all borrowed by Adler for the construction of his system. It is all old stuff, first propounded in 1907 and infinitely expanded ever since chiefly by a rich verbiage, but no "data," ending

in the phrase which sounds well, "Don't talk, go on and do it," as if the poets had not written for centuries—

"Do noble deeds,
Don't dream them all day long."

Dejerine, J. SÉMIOLOGIE DES AFFECTIONS DU SYSTÈME NERVEUX. Deuxieme Tirage. [Masson et Cie, Paris.]

This masterpiece has been out of print for a number of years. The demand, however, has been so great that the publishers have reprinted it, following the 1914 edition. There is no semiology in any language that approaches this work of Dejerine's. Although the newer extrapyramidal findings are not included yet the work stands to-day a giant as of yore. The younger neurologists are fortunate in now being able to fill in a gap in their libraries.

Malinowski, Bronislaw. CRIME AND CUSTOM IN SAVAGE SOCIETY. [Harcourt, Brace & Co., New York.]

In this recent addition to that interesting and valuable International Library of Psychology, Philosophy and Scientific Method the author has given a most fascinating glimpse of early custom and crime among his favorite Trobriander Islanders.

These native Melanesians live in the Trobriand Archipelago, lying northeast of New Guinea, in a group of flat coral islands which surround a central lagoon. Fishing supports those about the shores; vegetable raising those inland.

Malinowski upsets a host of anthropological traditions in his discussion of the customs which surround the economic activities of the different groups, chief of which the older beliefs in a "communitistic" type of life and the importance of "instinctive" obedience of folkways. He shows that individual activity, and group reciprocities maintain and that the "customs" follow individual psychological principles chiefly centering about the affect of "being liked"—*i.e.*, the transference situation in mass psychology as Freud has chiefly indicated. Malinowski does not use this generalization, however.

The book is in two sections. In the second primitive crime is discussed with its correlated primitive forms of punishment. Sorcery is shown to serve the ends of conservative social mechanisms, a prototype of later arriving legal procedures. Missionary zeal in attempting to overcome it is clearly shown to be foolish. It is reminiscent of a feud between the white man's and black man's Gods—the former is the more primitive and bloodthirsty after all.

This is a delightful little work to be read with others by the same author as of value, in more accurately seeing the "Tartar" that is in all of us, just beneath the surface of culture or hypocrisy.

Wildermuth, Hans. SEELE UND SEELENKRANKHEIT. [Julius Springer. Berlin.]

This introduction into the fundamental conceptions of mental structure and mental diseases is chiefly a short and compact presenta-

tion of the ideas of Jasper's and Schilder's and more particularly of Kretschmer's teachings. There are only about 60 pages, but they are very well expressed and indicate very clearly the development along the lines indicated.

Hoffmann, Hermann. DAS PROBLEM DES CHARAKTERAUFBAUS. SEINE GESTALTUNG DURCH DIE ERBIOLOGISCHE PERSÖNLICHKEITSANALYSE. [Verlag von Julius Springer. Berlin.]

This is a very ingenious work and merits more than the usual notice given to studies upon "personality analysis." Apart from certain efforts which have emanated from the psychoanalytic school, "personality and character" have been dealt with in a most superficial and unsatisfactory manner. The generalizations have been crude, anecdotal and of little service in the work of trying to straighten out human problems.

From choice, rather than from any neglect of the significance of constitutional factors in the development of human behavior, the psychoanalytic school have focussed their attention upon dispositional factors. Freud from the beginning has postulated unknown constitutional backgrounds, and has left them for others to study.

The Tübingen school has been an active one—one need only mention how much Kretschmer has stimulated the entire psychiatric discipline, and here, the author, also one of Gaupp's assistants, would offer this study which, founded upon the investigation of heredity situations, would attempt to show relationships of character and personality in their linkage to such a method of investigation.

He opens his monograph with a historical résumé of the outlining of personality types as conceived of from the constitutional viewpoint. Dilthey, Spanger, Müller Freienfels, Weininger, Jung and Kretschmer are the figures discussed and the views of Klages, Apfelbach, Ewald, Kronfeld and Haeberlin outlined.

Then follow his own formulations, as deduced from the "heredity study" point of view. The details cannot be summarized but they cover very wide perspectives in which many individual family outlines are dealt with, along lines made familiar by Galton and other investigators. The inevitable focussing point comes to a psychological consideration of the "instincts" which the author would summarize in terms of Kretschmer's psychobiogram, the exposition of which occupies the last ten pages of this two hundred page monograph.

Our own sympathies are not altogether in line with this effort; but we cannot refrain from noting the sincerity of the endeavor. Our heartiest praise goes out to the author in his striving to bring the whole situation into some tangible formation, even if a private opinion regards it as an illusion. Nature is too vast to be brought into systems. Even if it were, *cui bono*? The individual may be incorporated within the system, but remains an empirical entity just the same, and has to be dealt with as such. No doubt such studies help one to sharpen one's monistic proclivities, but when it comes to therapy we must remain pluralists and pragmatists at bottom.

Freud, Sigmund. DREI ABHANDLUNGEN ZUR SEXUALTHEORIE. Sechste, durchgesehene Auflage. [Franz Deuticke, Leipzig und Wien.]

A sixth edition of this outstanding "Three Contributions" shows its living qualities. One gathers it contains only nominal corrections over the fourth edition which appeared in 1920, since the Introduction to this edition is reprinted.

Psychoanalysis has gone forward even more than its founder had hoped, and as one reads of the translations of this work, first in 1910 in English by Brill; then into Russian, 1911; Hungarian, 1915; Italian, 1921; French, 1923; Spanish, 1923; Polish, 1924, one can readily understand the value placed upon it. It is of all of Freud's smaller works the most widely known, and yet still misread and misquoted.

Here he first introduced the concept "Libido" as for the creative energy of mankind, analogous to Hunger for the energy devoted to the craving for self-sustaining. His fundamental conceptions of "Object" and "Aim" as directions of interest for the discharge of this energy introduced a radical departure from the older behavioristic, descriptive modes of outlining obvious maladjustments, in which older behavioristic patterns of discernment the works of Krafft-Ebing, Moll, Havelock Ellis, and others were cast.

Now for the first time in the study of human behavior a dynamic concept was utilized, which in a more generalized and mythological form had been used by the Greeks under the conception of Eros. This newer mode of approach introduced order into the arrangement of the phenomena, just as the use of a mathematical function, such as πR^2 enables one to bring certain problems in the mathematical field into order and thus aid their solution.

Popular misconceptions that never look beyond the "obvious" and mostly superficial thus were controverted, and had to defend themselves by a still further nonsensical projection by saying that "pansexualism" explained everything in life, according to Freud. This is manifestly an absurdity if anyone should take the trouble to read this very remarkable book.

Popularly and behavioristically a whale is a fish, but biogenetically it is a mammal, and only a study of its reproductive system permits one to properly classify it in the order of nature. To call a zoölogist or a bōtanist a pansexualist, because he utilizes his anatomical and physiological knowledge of the organs of generation as a basis for classifying his animal and plant forms, is the kind of foolish logic followed by the ilk of those who speak of the Freudian conceptions of the "libido" as pansexualism. It stamps such as morons, just as are those who would maintain that a whale is a fish, refusing to look into the mechanisms by which it functions as a living organism.

The unthinking in the world are led along by the nose by such false slogans in every activity of life. For those who would use their brains, no more revealing work upon the hidden motives of conduct can be found than these "Three Contributions."

Bodin, Jean. CONTRE FREUD. CRITIQUE DE TOUTE PSYCHOLOGIE DE L'INCONSCIENT. [Masson et Cie, Paris.]

Who Bodin was, is, or may be we are in total ignorance. After reading the present work we are not ashamed of it. It is a pamphlet of 78 pages and about 20 pages of notes. In one respect it does justice to part of its title. It is, without mincing matters, "contra Freud."

Some day one hopes to find a criticism of Freud's conceptions by some one who knows something about them. Certainly Bodin shows an ignorance so abysmal it would be funny were not the subject matter of such great importance as to have so important a psychologist as Stanley Hall say in 1920, a propos of Freud's investigations, "that they have given the world a new conception of infancy and adolescence, and shed much light upon characterology; given us new and clearer views of sleep, dreams, reveries, and revealed hitherto unknown mental processes, showing that the law of causation extends to the most incoherent acts and the verbigerations of the psychotic; gone far to clear up the terra incognita of hysteria; taught us to recognize morbid symptoms, often neurotic or psychotic in their germ; revealed the operations of the primitive mind so overlaid and repressed that we had almost lost sight of them; fashioned and used the key of symbolism to unlock many mysticisms of the past; and in addition to this affected thousands of cures, established a new prophylaxis and suggested new tests of character, disposition and ability, in all combining the practical and the theoretic to a degree as salutary as it is rare."

Bodin finds nothing in it; everything can be explained in much more simple and comprehensible terms. One gathers he is going to write a book about it; "La Sibylle" he will entitle it.

He does not tell us he has ever attempted an analysis. He says he has read all Freud's books. We doubt it! He could not even cut the pages and make the ridiculous misstatements he makes.

His entire attack seems founded upon Freud's Introduction, which was translated into French by Jankelevitch. He is totally unaware that this was a course of lectures given to a lay audience. His ironies and sarcasms are pointless, as he has not comprehended in the least what Freud's conceptions are. One could quote phrase after phrase if it were worth while. Thus he makes the ridiculous statement, page 25, that Freud is "astonished that no one, before him, had observed the existence of a sexual life in infancy." The statement made by Freud is that "it is a popular misconception of the lay observer that the infant has no sexual life." This is the kind of boggled misquotation throughout. A propos of the "wish" in the dream, Bodin makes another atrocious misstatement (page 81) re what Freud says about Linkus. One has but to look over the literature given by Freud himself to know that the "wish theory" was enunciated as early as 500 B.C. by Heraclitus. What Freud really says is that an actual dream with its analysis in the Freudian sense, by Linkus is the first with which he was acquainted.

It would occupy more pages than this 100 page work to point out the stupidities and inaccuracies contained therein. We have given it more space than it deserves already.

Pilcz, Alexander. UEBER HYPNOTISMUS, OKKULTE PHAENOMENE, TRAUMLEBEN. U. S. W. Sieben Vorträge für gebildete Laien. [Franz Deuticke, Leipzig und Wien.]

We are reminded in the author's short Introduction that these seven essays were prepared for intelligent laymen, not for specialists, which latter will find little that is new.

They deal with such subjects as: Suggestion and Hypnotism, The Significance of Suggestion Among the People, Telepathy and Other Occult Phenomena, The Dream Life of the Healthy and Sick, On Memory and Its Disturbances, Psychiatry and Musik, and Morphineism, Cocainism and Other Narcotic Poisons. Here certainly are topics of no small interest to the laity as well as to the specialist, and our author handles them with no little skill. In fact, he makes them not only intelligible but extremely interesting, even to a specialist who now has read them.

His opening sentence about the idea of "rancid butter," the "imprisoned canary bird," and seeing the "Island of Corsica," all being suggestions, offer an excellent series of examples of how readily many, yes, most people, become "Mr. Easy Marks" and fashion their behavior in accordance with suggestion. In modern parlance one speaks of it as "selling" an idea. "Advertising" is its happy hunting ground; propaganda and "press agents" its chief mechanisms. Of this capacity to have it "put over" the author deals with entertainingly, even if somewhat on the surface, and the analogies to hypnotism are well brought out.

How widespread is this capacity for capturing the imagination of the noncritical is dealt with in the same intriguing manner in the author's second chapter. He illustrates it in various ways, not the most interesting of which is his discussion of psychical epidemics. In the United States, where the slogan is "to try anything *once*," one sees a conscious acceptance of the principle, and incidentally it casts more light upon the "bravery" of the American people than upon their "superficiality," so called. This also explains why more types of anomalous religions, sects, cranks, and bizarre notioners may be picked up here, there and everywhere among us, than almost anywhere else, and why, after all, the "ideal" of the type of democracy promulgated is not as bad as it seems on the surface. Mr. "Show Me" is not as frequent in Missouri as he is in Holland or Switzerland, for example, or else we never would have had Ford cars, the General Electric Company, or the Standard Oil enterprises.

Had we space to touch upon the other topics we would do so, but leave them with the general statement that we here have a readable series of chapters, even if, at times, much more fundamental issues are glossed over. The author's discussion of the dream life perhaps shows this surface handling more than the other chapters.

Morselli, Enrico. LA PSICANILISI. STUDI ED APPUNTI CRITICI. Tomi I e II. [Fratelli Bocca, Torino.]

To find a two-volume treatise of approximately 400 pages each upon any subject is to make one ponder. When the author happens to be a veteran psychiatrist, professor, and director of the neuro-psychiatric clinic of the University of Genoa our interest is doubly aroused from the subjective point of view at least. When further the subject matter discussed at such length is psychoanalysis it is apparently good evidence to suppose the issue is a living, growing one, and not something dead and buried, as has been vociferously, grandiloquently, and triumphantly proclaimed by various pseudo pundits during the past twenty years.

The work opens up with promise of an impartial and thorough review of the entire situation. This of course would be a difficult undertaking. No one can be impartial, and as for thoroughness in reviewing the psychoanalytic literature this has now become impossible in view of its mass. It is all the more difficult since even to attempt to review Freud's work alone has special difficulties, since it is so compact and organically still a living body of empirical findings. Anyone who attempts to abstract any of Freud's papers finds this difficulty. Nearly every sentence says something; the whole discussion is so closely knit that a dropped stitch, as it were, fails to hold the matter together. It is fact gathering of the most practical kind.

One soon finds that Morselli is neither unprejudiced nor well informed. In view of what has been said regarding the latter, this would not be so great a fault if the lack of information concerned detailed features, but when one finds total misconception of quite fundamental principles, this is inexcusable.

Perhaps it is of minor importance that one of the author's discontents is with terminology. A poor workman has always been said to complain of his tools, and terminologies are but tools which, in order to be used, must be comprehended. The reviewer, as a medical student, used to get a headache regularly when listening to an old professor of surgery who talked of "healthy laudable pus" and complained about the new fangled terms, such as bacilli, streptococcus, staphylococcus, etc. Not many years later another professor complained of the new terms, erythrocyte, eosinophile, polymorphonuclear leucocyte, etc.; just "blood" was good enough for him—and thus with every expansion of knowledge new terms may be necessary. Thus when Morselli complains of unconscious, repression, displacement, affect load, transference, libido, introjection, introversion, etc., he shows that impatience with new conceptions so characteristic of what Galton has spoken of, "the inability of old age to reverse their thought"—*i.e.*, get away from the older conceptions of "healthy laudable pus," "blood," etc. Morselli does not comprehend what lies behind the conceptions, hence they are meaningless—just as "streptococcus" was nonsense to the old teacher of surgery.

Morselli, like many another, seems to fall into the arms of the

critics. His adoption of Wittels is strangely like one of our American critics who swallows Wittels, hook, line, and sinker.

What annoys one the most in trying to give Morselli full credit for his avowed impartial attitude is his naïve, almost banal comprehension of the whole situation. In his citations of literature and comparisons of authors he is extremely indiscriminative—almost putting in the same bracket, as it were, an Edison with some local electrical tradesman who only knows enough to repair one's electric call bells. For him there is a tendency to look no further than the name psychoanalysis and take no cognizance of the conceptions. We find the same confusion widespread in the United States. The Atlantic City board walk "psychoanalyst," the "Broadway Institute of Psychoanalysis" where fifty cent "readings" in three minutes are given—is made the butt of cheap humor by certain critics.

One very amusing bit of nationalism appears not infrequently in Morselli's book, and how reminiscent it is of the days of Charcot and hysteria. In those days only the "French" had hysteria. The English and Germans and other "superior" races did not suffer from such a degrading disorder. No one ever happened to note what Briquet wrote in his very excellent work on hysteria, that depreciatory terms for "hystericals" were stupid and ununderstanding. Now Morselli wishes us to believe that "sexual complexes" are not to be found in the "superior Latin races," especially their women. They are naturally to be expected in the "vulgar Anglo-Saxon races." Thus does such nonsense enter into "nationalism."

Here in the United States one hears the same kind of rubbish. Paris used to be the sink hole of depravity; now it must be Vienna—or for those who know naught of Europe, New York is the Babylonian hell of all that is unclean and impure. "Honi soit qui mal y pense" seems to have been entirely forgotten by all those who project their own repressed material upon other people. Those clergymen type of fanatics, for instance, who only can see "coitus" in "dancing."

Morselli seems not to have at all perceived what Freud means by his "Das Es" as a mental system. Neither the significance of "fore-conscious," nor the work done by the "super ego" system. In fact the conception of the "unconscious" in the Freudian dynamic sense is dealt with in a most naïve and superficial manner.

One might go on in this vein but were we to do so we would traduce an otherwise rather valuable presentation. We give the author credit for the sincerity of his purpose, even when feeling doubtful as to his understanding of what it is all about.

Healy, William, and Bronner, Augusta F. DELINQUENTS AND CRIMINALS. THEIR MAKING AND UNMAKING. STUDIES IN TWO AMERICAN CITIES. [The Macmillan Company, New York.]

For the future we see yet deeper understandings of delinquents and criminals, of why they do what they do, and of what changes are

wrought, for social weal or woe, by any and every step of treatment accorded them by their fellowmen.

"Offering high adventure, difficult and challenging, incomparably more beneficial to our time and civilization than polar exploration or unearthing ancient cities, is the discovery of the springs and sources and later conditionings of human conduct."

Fortunate it is that this small part of a program can come into definite shape in the work before us. It is a program, a forecast, and an orderly arrangement of data, that intrigues our imagination, chains our attention, and obtains our unconditional approbation.

As yet no sociological synthetic studies are at our disposal to definitely teach us what proportion of weal or woe in the body politic must needs take our taxes in the machinery of government, but our impression is that it is not by any means small.

If the manufacture of "locks and keys" is but a submerged detail bearing upon the matter of criminality, and the upkeep of our courts and judiciary the electrically illuminated aspect of this same facet of human behavior—these two items alone, were they amenable to statistical treatment, might give one an inkling of the imperfections of ethical organization in the body politic, towards the understanding and amelioration of which this fascinating volume is germane.

Why deal with the details of this excellent presentation further than by saying that we know of no work in the English language bearing on the subject more worthy of study and of possession, in order to restudy and then some more.

In a somewhat pessimistic post-war mood, a celebrated English pragmatist, in an address before the Aristotelian Society of Great Britain, has voiced the opinion that our social machinery for self-regulation had broken down. It is not a far cry to state that if such studies as are here presented should receive the attention and encouragement they deserve that a more optimistic attitude might be gained and that the defects in our social machinery, chiefly registerable in major and more obvious forms of delinquency, might be obviated or at least mitigated. As for the vastly more widespread and hidden aspects of spiritual wickedness in high places, concerning which the present volume only affords a smoke screen, the less said here the better. This is for "Ethics," social as well as individual, which field has been hardly more than scratched on the surface. Here exploitation of human ethical diseases for commercial profit seems the only, at least, more obvious goal. May the present volume do its mite to cast light upon this dark domain in the very imperfect social machinery.

OBITUARY

LOUIS SCHNYDER

Dr. Louis Schnyder died in Bern, March, 1927, after a very brief illness. His years of service in psychotherapy leave the field enriched by the force of a personality devoted to quiet, effectual work made extensive by freedom of outlook. His mind had the breadth and depth of genuine culture, which had been especially developed in literature, but was none the less applied to his chosen profession.

He had been influenced in his psychotherapy by a term under Dejerine and then by association with Paul Dubois. With the latter he revealed that special insight and that empathy for his patients which made him a successful collaborator of Professor Dubois for twenty years and a worthy successor after the latter's decease. Most of his practical activity was carried on at the Victoria sanatorium in Bern. Although he followed chiefly the method of persuasion, guiding the patient to the exercise of his will, he was no strict adherent to this or any other system of therapy in a fixed sense. He applied his clear observation and psychological insight not only to understanding the individual patient but also to selecting from any school of therapy, including that of psychoanalysis, that which would best suit the patient's needs. The results of his observation and of his professional experience have been made known throughout a wide range of publications. His work has been recognized both at home and abroad.

Dr. Schnyder was born in Switzerland in 1868 and received his education in his own land, his medical education chiefly in Bern, with the exception of a semester in Würzburg and one at the Salpêtrière under Dejerine, together with a period at Vienna. He supplemented his medical studies by a year as assistant at the clinic of Sahli. His degree in psychotherapy was received in 1912. He was one of the founders of the Swiss Society for Neurology, of which he has been president since 1924. He was president also of the College of Physicians of the Victoria Sanatorium. A chief interest outside the field of his professional activity was the psychological study of modern French literature.

N. B.—All business communications should be made to *Journal of Nervous and Mental Disease*, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

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ORIGINAL ARTICLES

THE RÔLE PLAYED BY THE CUTANEOUS SENSES IN SPATIAL PERCEPTIONS *

BY WILLIAM MALAMUD, M.D.

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To the student of mental diseases, the study of the function of the special senses in health and disease is of double interest. In the first place it is quite evident that in their capacity as the portal of entrance of all possible stimulations from the objective world, the special senses will be depended upon to function within certain limits in accordance with some given standards in order to assure a normal or, what is probably more nearly correct, an average orientation in actuality. When we consider the fact, therefore, that all mental diseases, no matter what their respective individual characteristics may be, have this in common, that the conscious appreciation of actuality (as evidenced by reaction) has been shifted from within these limits, one can see of what great interest it would be to us to know what relation there may exist between these disturbances and specific disturbances in the special senses.

There is, however, another bond of common interest between these two sciences which, even if not of quite as evident practical importance; is nevertheless equally as interesting as the former. It is the peculiar parallelism that has always existed between the relations of these two to their respective allied sciences. Ever since the days of the early Greek philosophers the study of the function of the special senses has been one of the points of common interest of philosopher and student of biology. It was in this field that the idealist and rationalist hoped to find the objective proofs of a *priori*

* Preliminary report.

ideas, and it was here again that the materialist and empiricist searched for a starting point for the construction of the subjective world. Thus it became the battlefield of the most brilliant minds, presenting a peculiar admixture of metaphysics and introspection on the one side, and skepticism of objective observation on the other; the hope for a possible link between the mental sciences and biological fields of endeavor for all. It is not necessary to search very far for the analogy between this field and that of psychiatry on these grounds. For it is just such a position that the study of psychopathology has occupied ever since psychiatry became part of organized biological medical sciences.

The results of the neurophysiological experiments that I would like to discuss now, although covering only a small and rather specialized sector of the problem of perception and its relation to the physiology of the special senses, nevertheless must be preceded by a few remarks on some general considerations of the problem. For whatever the interpretation of facts observed in such experiments and conclusions reached may be, the point of view from which the problem is attacked must be presented at the very outset. The investigation of the problem of perception in general and that of the perception of things in space in particular, and its relation to the physiology of the special senses has been influenced by the point of view of the different investigators to such an extent, and the very type of experiment constructed by the different types (nativists and empiricists, to mention one group), of such fundamental difference, that such general considerations, no matter how far afield they take us, can never be considered superfluous, and are at most times essential. And so it seemed to me of the greatest importance to state clearly just what we mean by space, by perception, and by sensation, if they are to convey anything definite to our minds at all.

The question of space as such is one of philosophical rather than neurophysiological interest. From the above statement that we are investigating the perception of *things in space* rather than the perception of *space*, my attitude towards this question at once limits itself quite definitely. With Kant, and very much more recently Von Kries,⁽¹⁾ I regard space not as something acquired through experience, not as something that can be perceived, but as a necessary prerequisite of perception as such. In other words, I would regard space as a form which sensations in general must acquire before they are rendered perceptible. When I say this, it is with the full realization that the question is disputable. But the dispute between the nativistic and empiristic schools having been so clearly and definitely

presented by adherents of both sides as well as by more or less impartial investigators (Von Kries and William James(2) especially), flaws in both theories so ably brought out by the opponents of the one and the other, and absolutely convincing proofs of either theory as yet unestablished, a reconsideration of the discussion seems superfluous.

The situation is somewhat different as regards the relations between perception and sensation. There was a time, and not so long ago, when the "association" and "sensationalistic" schools in psychology, which first saw the light of day in the Sophistic maxims but were systematically revamped and organized by those who claimed to be the followers of Berkeley, were seriously considered. In the hands of extremists (and to present theories most strikingly even if somewhat schematically we have to present extremes), this theory claimed the following. Any perception is really a simple association of different sensations. When I perceive a body in space, I merely add up several sensations which I receive from this body and its relation to others. So we could say that the perception of a book lying on a table would be a synthesis of optic sensations; the colors and difference in light and shadow; plus tactile sensations of roughness or smoothness, sharpness of edges or rounding of corners either received at that moment or present in my memory from previous experiences; sensation of weight, and so on, which are added up to form the particular perception. Such a theory, if anyone really and earnestly believed in it, is now a matter of the past. Neurophysiologists and psychologists of the most widely differing bends of mind have come to appreciate that sensation and perception differ not only quantitatively but also qualitatively; that even if we say that sensations combine to form a perception, we must also say that they undergo a most profound elaboration before they can be spoken of as a perception, and so James speaks of a "pure sensation being an abstraction." But even if we eliminate the dispute on this particular side of the question, there still remains a forking of the roads along which our investigations of the special senses can proceed.

This divergence influences very materially not only the theoretical considerations and conclusions of the different investigators, but also the very methods used in the construction of the experiment, and as this divergence is fundamentally conditioned by the individual concept of perception and sensation, and the interrelation of the two, it would seem that the question could be approached best by attempting to define these two terms. By *perception* I understand the act of becom-

ing consciously aware of a content hitherto outside of consciousness. There does not seem to be any material difference of opinion with any of the investigators so long as they all agree on the fact that perception in this sense is used for the crowning act of the acquisition of the conscious content. This is essentially the concept for which Helmholtz proposed the term *Wahrnehmung*, which is used by most German neurophysiologists and psychologists (Von Kries) and which corresponds to our term perception. When we approach the definition of the term sensation, however, we find much more difference of opinion. In fact, most investigators try to evade a direct definition. It would seem that from a biological point of view the word sensation should really imply the product of the specific function of any one of the individual senses. Psychologically, however, it is somewhat difficult to grasp what this means. Everyone agrees that pure sensations in this sense cannot be spoken of as psychological entities, and when we speak of the sensation of red or pain, we do not mean the changes in the rods and cones or in the nerve endings of the skin. Some investigators have attempted to avoid the difficulty by postulating a series of gradations beginning with the actual physiological contact of stimulus and end organs and ending in a perception. Seeing that the perception is consciously the clearest concept, one begins with that as a complex and analyzes down as far as one can go, finally reaching nonanalyzable elements, and one calls them sensations, applying different qualifications to them; so Dunlap speaks of "sentienda," (3) Von Kries of "simple" or "pure" sensations, etc. From a psychological point of view, we may agree without any further dispute upon calling such elements sensations. The next step would consist in determining what relation these elements bear to the accomplished perception. Most investigators have given up the idea of trying to build up the perception from a simple addition of these elements. They all speak of perception as a "complex." This "complex" concept, however, is regarded by some as a quality which the different sensations have to assume in order to enter into the formation of a whole, whereas quantitatively they can, to a certain extent, be isolated out of the complex (Henning (4) et al.). These elements, therefore, they regard as real entities. Some investigators, especially the empiricists, apply the Aristotelian maxim in regarding these elements as endowed with a somewhat lower degree of consciousness than real perceptions, speaking of them as being not as "definite," not as "complicated," not as "clear" as perceptions, but essentially contents of consciousness.

It is quite clear that in approaching our problem, that is, the

question of deciding what rôle the cutaneous senses play in the perception of things in space, from this point of view, we can follow a fairly simple mode of procedure. If sensations are essentially the same as perceptions, or rather, if sensations can be regarded as quantitative components of perceptions, we could, by excluding all other portals of entrance, and presenting objects for perception to our cutaneous senses only, decide just how much of a perception we can thus obtain. This is somewhat crudely expressed and is probably extreme, but to my mind seems to be the underlying trend of investigations in that field. All the threshold investigations and tactual form-perception studies seem to depend upon this method of approach. For in all these investigations the skin is dealt with as an organ not of sensation, but, essentially, of perception. And even the standards of measure applied remain of the same, *i.e.*, mathematical, value as those applicable to perceptions.

A serious consideration of our definition of perception as stated above, however, does not admit of such gradations, in fact such gradations would contradict the very sense of it. A perception must remain an element within consciousness. As far as our conscious appreciation is concerned, we must say that a perception is born directly out of a whole objective situation and that, although we can theorize, and probably quite correctly, that perception is evolved on the basis of some preceding processes, consciously we cannot know them. Sensations, from this point of view, will have to be regarded as qualities only. Thus I perceive a form in space, a form that is either black or red, heavy or light, hot or cold, etc. It is not built up by these, cannot be quantitatively reconstructed out of these, but possesses them as qualities, and as such they can be projected upon analysis into the fields of different organs of special sense. From this point of view, sensations really may be regarded as representative of the functions of these organs. When we approach the investigation of these, however, we will have to remember that our standards of measure will have to be those applicable to their particular qualities, and so will not speak of two cm. of red, but of a more or less intense redness, then again, of pain, heat or cold, etc. Mathematical, geometrical and other such standards will remain within the domain of perceptions, but not applicable to sensations. How then can we approach our problem; that is, the rôle that the cutaneous senses play in our perception of things in space, from this point of view? Simply by attempting to find out in what way the qualities peculiar to perception as such are influenced by a change in the qualities peculiar to sensations.

This point of view was used as the starting point of an investigation of the rôle played by the cutaneous senses in the perception of things in space in an experiment at the *Universitäts Nervenlinik* at Heidelberg and now continued here. The experiment consisted in attempting to determine in what manner our spatial perceptions will be altered by altering those qualities of the stimuli which could be considered as cutaneous. It was carried out by applying to the skin of the volar surfaces of the resting forearm, (1) two hard rubber points, followed by (2) two sharp metallic points, and vice versa. The subject was not aware of the order in which these stimuli came or of the distance between them, the eyes were blindfolded, the results of the comparison were not known to the subject. Furthermore, the experiment was carried out with the aid of an instrument which insured equal weights on both sides, and no possibility of either one of the two similar points becoming successive rather than simultaneous. The hard rubber points were filed off so that the sensation was that of touch only, the weight behind it (30 grm.) being negligible, considered as pressure. The sharp metallic points were used as pain stimuli. The subject was to tell, firstly, whether the two distances were equal in length or whether one was longer or shorter than the other; secondly, what he judged the distances between the two points to be. In experiments carried out in Heidelberg, the answers as to distance were given directly by the subject; in our experiments at Foxborough, we thought it more advisable to have the subject arrange two riders on a centimeter rule to include a distance which he judged was equivalent to the distance between the two points applied to the skin. We thus hoped to eliminate still further the effect of the investigator's approval or disapproval of the judgment, and also to make the procedure somewhat simpler.

Before we approach the discussion of the results obtained in this particular part of the work, it will be necessary to add a few general remarks on some other aspects of the problem that may help to bring out the point in question more clearly. With the gradual increase of objective distance between two stimuli of whatever quality (touch, pressure, pain, heat, cold, etc.) from zero centimeters and up, the subject experienced at definite levels, both quantitatively and qualitatively, certain changes best described as thresholds. These varied with different individuals and different qualities of the stimuli. In principle, however, four such thresholds could be established. In order to present these most clearly we will concern ourselves at first with those of tactile nature in one of the subjects. As the distance

was gradually increased from zero, the subject was unable to discriminate between the two points, experiencing a one point value up to 3.3 cms. The one point experience then changed into that of a solid edge-like distance. This we called the first threshold. This lasted up to 5.2 cms. when the experience changed into one of a distance bounded by two points. Therefore 5.2 cms. was considered the two-point discrimination, or second threshold. This distance, however, was experienced as a very small one, the points being judged as practically near one another. At 6.7 cms. this distance reached, more or less gradually, an approximation of the true objective value. The distances above this were judged very nearly correctly, and as lying between two points up to 13.5 cms., above which two points could be distinguished, but no definite estimable distance between the two could be experienced, whereas the two points were perceived more or less successively and by what appeared as a "jump" from one to the other. The third and fourth thresholds were therefore 6.7 and 13.5, respectively. Quantitatively, these four differed with the different individuals, but remained in principle the same. Qualitatively the four differed even with the same types of stimuli in the same individual in that below the second there was a perception of distance without points, whereas above the fourth there was one of points without definite distance. The thresholds in the same individual differed, furthermore, quantitatively, with the different qualities of the stimuli in that the first three thresholds were at a uniformly higher level for pain bearing than for tactile stimuli, whereas in the fourth the conditions were reversed. This influence of the quality of the stimuli was quite constant and was also found by Skramlik.(5) In fact the differences observed by this author were even larger than we could demonstrate, although he worked with values about the second threshold only. For reasons discussed more fully in our first report of the experimental work at Heidelberg (6), we did not consider the experiments with threshold comparisons as reliable enough for our work, and instead of that proceeded with the comparison of distances lying between the third and fourth thresholds, *i.e.*, where the judgment of distances is at an optimum.

As stated above, the two qualities used were those of touch and pain. The results obtained were definite and uniform. We found that when two distances objectively the same but bounded, one by two tactile and the other by two painful stimuli, were compared, the first was invariably experienced as larger than the second. Then again, by changing the *objective* distances we could equalize the dis-

tances experienced either by making the space between the tactile stimuli smaller or that between the painful stimuli larger.

The results of modifications in the experiment, by substituting heat, cold and electrical stimuli for those of pain, were practically the same. So far, however, we have been dealing with qualities that as sensations belong to the cutaneous field. A series of experiments attempted with stimuli of different geometrical configurations, such as small circles, squares, oblongs, etc., but otherwise being of the same, *i.e.*, tactile nature, gave no positive results. In other words, the shape of the stimuli did not affect the distance perceived.

To sum up, therefore, we can say that

(1) Two spatial contents objectively equal but limited by stimuli of different qualities are perceived as unequal;

(2) That such contents between pain bearing stimuli are perceived as smaller than between tactile;

(3) These qualities must be cutaneous in type, in other words, cutaneous sensations; for other qualities which are of geometrical value do not seem to exert such an influence.

So far, we have restricted our experiments to the field of the cutaneous senses; having begun with rather simple space contents we propose to investigate next more elaborate ones. The results with these, however, are not as yet complete enough to admit of definite statements. The cutaneous senses, however, are not the only ones that behave in this way. Quite recently Warden and Flynn (7) have shown that the sizes of objectively equal cubes were judged comparatively smaller or larger depending upon different colors and also upon the serial arrangement of these colors. In other words, in the field of the optic sense, too, qualities peculiar to sensations influence the perception of spatial contents. Their results (in the same experiment) with the color weight relations bring in new complications in the form of indirect sensory effects upon perception. There we have to deal with two distinct fields of sensation. The results, however, are in principle the same as the previous ones.

In our experiments in this field we prefer, however, investigations that begin with the simplest possible spatial perceptions, not only the limitation at first to a special sensory field, but also to simple spatial contents. It was for this reason that we started with the investigation of lines, *i.e.*, geometrically the simplest extended bodies. Cubes, simple as they may appear, bring in interrelations of surface, depth, angles, as well as the stimulation of more complicated psychic experiences and memories. There is no reason, however, why we could not investigate the effects of optic sense qualities on the per-

ception of lines and distances in the same way as we have investigated the tactile sense.

Our experiments, as well as those of Skramlik and Warden and Flynn, were undertaken with normal individuals. Even with this material the work is as yet only at the beginning, and much more work will have to be done before definite statements can be made. Nevertheless, one can see even now the possibility of new avenues of approach to neuro- and psycho-pathological material too. It is quite possible that our orientation in space in general is, to a great extent, dependent upon a balancing of just such qualitative influences, and a balancing which is essentially acquired by experience. If it be true that in an individual who is dependent in his orientation upon the normal coöperation of all his senses, the shutting out of the influences of all senses but one will result in faulty perception, we can then postulate that normally the influences of the different senses will, so to speak, have to compensate for one another. As a substratum upon which such a process can take place we must assume *space* in the sense expressed above, *i.e.*, as a form which in all contents perceived is a prerequisite of perception. Within this, however, the process of compensation can be gradually developed by experience with ideals as standards of comparison. Actually, results of experiments with children and some adults with brain lesions point to the possibility of demonstrating both early stages and regressions in this mechanism.

At this point we can just touch upon a consideration which in the present work is as yet purely theoretical, but nevertheless of great interest, *i.e.*, the problem of repression, for this is just the type of mechanism we will have to consider as taking place in the normal conscious evaluation of contents in space. Theoretically we could say that having perceived the distance between two painful stimuli as being say 5 cms., I will, on opening my eyes, "discover" that it was "really" 8 or 10 cms. Thus the influence exerted by the pain value upon my orientation in space through the medium of the cutaneous sensibilities will be "shut out" when I return to the conditions normally utilized for orientation.

Hypothetically too we can further consider the question of the principles underlying this influence of what one might designate as the shrinking of space between two painful stimuli. In psychopathology one meets with the reports of such phenomena especially in the psychoanalytic literature. There one finds a similar tendency towards a decrease of the span of time between two unpleasant experiences, and the postulation of a conflict between conscious appre-

ciation of actual time and an influence exerted by some emotional component to effect a shrinking. There the principle of active repression and a tendency towards pain elimination is advanced as the underlying mechanism. Whether complicated psychopathological phenomena can be reduced to simple mechanisms is a question. The probing of facts, however, is always open to the experimental investigator and in the realms of time just as those of space the problem can be approached on a comparatively simple level.

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AMYOTROPHIC SYPHILITIC MENINGOMYELITIS:
REPORT OF TWO CASES WITH ARGYLL-ROBERTSON PUPILS*

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Amyotrophic syphilitic meningomyelitis occurs not very infrequently and in many instances the causative factor is overlooked, or not determined. Because of the fact that early and vigorous treatment in these cases may bring about a complete arrest, and cure in many instances, it was considered important to carefully study two such cases that presented Argyll-Robertson pupils, in addition to muscular atrophy.

In sixty cases of amyotrophic syphilitic meningomyelitis collected by Martin (1) the average period of incubation after the appearance of the primary lesion was seventeen years; the shortest was four, and the longest thirty-seven years. Head and Fearnside (2) report one case in which symptoms started eighteen years after syphilitic infection. In the group collected by Martin there were fifty cases in men and ten in women. Two-thirds of them occurred between the thirty-fourth and fiftieth year, which is in agreement with Kinnier Wilson (3), who states that the disease occurs most frequently in the fourth decade.

Three theories have been advanced to explain the pathogenesis of this condition. The first proposes that the condition consists of an infection of the leptomeninges with syphilitic organisms. As a result, the matted arachnoid and pia become adherent to the cord and the toxins from the meninges probably invade the outlying margin of the cord and destroy it fiber by fiber. This theory is known as destruction per continuitatem. This explains the marginal degeneration of the white matter of the cord and the glial reaction on the surface of the medulla. The second theory is that the destruction is associated with the vascular disease. The third is that the syphilitic toxin passes through the lymph channels. This is the most satisfying hypothesis because it explains why the posterior columns are not involved, as they have a separate lymph system.

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According to Raymond (4), Léri and Lerouge (5), Martin and Kinnier Wilson, the pathology of this disease may be summarized as follows: Chronic leptomeningitis throughout the whole length of the cord and medulla. A severe ependymitis in the fourth ventricle. An intense glial reaction toward both surfaces of the brain stem; intense degeneration of the white matter around the margin of the cord (marginal degeneration); degeneration of the anterior horn cells and of the cells of Clark's column, almost absolute in the cervical enlargement, much less but still very definite throughout the remainder of the cord. The degeneration of the more central white matter is less marked, the columns of Burdach being the least affected. This tract degeneration is most pronounced in the middle and cervical enlargement of the cord. There is a moderate degree of arteritis of the meningeal and intraspinal arteries, affecting chiefly the intimal and adventitial coats of the vessels. Small vessels within the cord are increased in number. Throughout the cord and meninges there is a moderate amount of perivascular infiltration with lymphocytes. Because of these findings it was concluded that the disease was syphilitic in origin.

Three principal symptoms are usually present at the onset or come on separately. There is weakness, wasting of the affected part, and pain either of the root type or neuritic in character. In Martin's series weakness and wasting occurred as the first symptom in 77 per cent, while pain as an initial complaint occurred in 23 per cent. Spiller (6) reports a case of unilateral weakness followed by wasting of the muscles. Head and Fearnside mention a case in which the initial symptom was weakness of the middle finger of the right hand. They also report a case with atrophy of the small muscles of the hand. They feel that the atrophy is likely to be accompanied or preceded by pains of root origin. Martin states that 60 per cent of all the cases begin with wasting of the small muscles of the hand. This symptom was usually first noticed in the thenar eminence, and the power of adduction and apposition of the thumb were lost. The interosseous spaces became hollow and weakness soon became apparent. At this stage a typical case shows fibrillation in the affected muscles. As the extensors waste, the wrist drops and the fingers become flexed. The wasting attacks individual muscles, jumping from one muscle to another, leaving the intervening muscles unaffected. The deltoid may be involved and then the extensors of the wrist. This feature is very characteristic of the disease. In 20 per cent of the cases the wasting begins in the shoulder muscles, *i.e.*, the deltoid, supra- and infraspinati and the upper part of the pec-

toralis major; while in 10 per cent it begins in the peronei or anterior tibial muscles. The intrinsic muscles of the feet, the calf and finally the thighs and hips are involved. Cases beginning in this way bear a marked resemblance to the Charcot-Marie-Tooth type of atrophy.

In Martin's series the pupils were either Argyll Robertson in type, unequal, irregular or normal. In 28.5 per cent they were typically Argyll Robertson. Raymond reported four cases in which the pupils were Argyll Robertson in type. Similar instances were reported by Head and Fearnside, Léri (7), Spiller, Nonne (8) and Léri and Lerouge.

Spasticity of the lower extremities was present in 35 per cent of the series. The knee-jerks were weak or absent in 40 per cent of the cases. The tendon jerks disappeared early in the affected limbs.

Fibrillation was less constant than in the idiopathic cases of amyotrophic lateral sclerosis.

Sensation was usually normal and when a change occurred it was the vibration sense only. Incontinence of urine and feces occurred occasionally. Bulbar symptoms are uncommon, and in no case have they been reported.

The Wassermann reaction on the blood serum was positive in the majority of cases. In Martin's series nineteen out of twenty-five were positive, while Head and Fearnside reported two positive reactions in four cases. Vizioli (9) also stated that the Wassermann reaction is positive.

The spinal fluid is usually clear and may be under increased pressure. The cell count averages 40, sometimes being more and sometimes less but always remaining under 100. There is a predominance of lymphocytes. The Wassermann reaction on the spinal fluid is positive in practically all untreated cases. According to Head and Fearnside, the spinal fluid may become negative after antisyphilitic treatment. The efficacy of antisyphilitic treatment in this condition is a moot question. Léri reports a case in a physician who was cured by specific therapy. Head and Fearnside, however, claim that those patients who show pupillary abnormalities apparently do not improve under specific therapy, because this type is a syphilis centralis and is analogous to tabes, optic atrophy and paresis. Dana (10) advises early and vigorous antisyphilitic treatment and expects good results.

CASE REPORTS

Case I. An Irish-American woman, aged forty-five, was admitted to Dr. Pollock's neurological service at the Cook County Hospital in 1924, complaining of weakness in the hands and legs, and of diminished hear-

ing. She stated that she was apparently well until one year before, when she noticed that both legs became fatigued and weakened after walking about, and she would be forced to rest for a few minutes. The weakness became progressively more marked, so that she staggered a little when she walked. She noticed no pain or cramps in her legs, except during bad weather, when she would have some dull, aching pain. At about the same time she noticed weakness in her hands, more marked in the right. She attributed this to needlework, of which she was doing a great deal at the time. Several months after the onset of the weakness she noticed that her right hand was becoming smaller, and that there were hollow spaces over the back of the hand. Occasionally she would have dull, aching pain in the hand after it became tired. The partial deafness, which was more marked in the right ear, had been observed for about six months. It apparently started during a bad cold, then was accompanied by a buzzing sound like a sawmill, and finally greatly diminished hearing in the right ear. The patient also complained of some difficulty in starting the urinary stream, and had been troubled by constipation for eighteen months. She had some epigastric disturbance, with belching. She denied venereal infection but gave a history of one miscarriage five years previously. The family history was entirely negative.

Physical examination revealed an adult white female, who appeared anemic and walked with a spastic gait, at times appearing ataxic. The temperature was 98°F., pulse 76, respirations 20. The pupils were typically Argyll-Robertson in type. Ophthalmoscopic examination was negative. The tongue did not show any tremor. There was partial deafness in the right ear, air conduction being decreased while bone conduction was normal. The tonsils were enlarged and hyperemic. The finger-to-finger test was slow and somewhat ataxic. There was weakness of the adductor brevis pollicis and opponens pollicis of the right hand. There was atrophy of the thenar eminence, with inability to completely adduct the thumb or to oppose the thumb and little finger. The interosseous spaces of the right hand were more hollow than those of the left. There was weakness of both legs and the right forearm. The deep reflexes in the right upper extremity were present, but less marked than in the left. The deep reflexes in the lower extremities were brisk. No pathological reflexes were found. The sensorium was intact. The patient was mentally clear and showed no evidence of psychosis. The Wassermann reaction on the blood and spinal fluid was positive. The spinal fluid was clear and contained 45 lymphocytes per cubic millimeter. The Ross-Jones test was positive; the Lange curve showed changes from the third to the seventh tube.

The patient has been under vigorous anti-syphilitic treatment with neoarsphenamin, mercurial inunctions, and potassium iodid. Six months ago the wasting had stopped, and she no longer complained of weakness. She was able to use the right hand as well as the left. Walking was still

difficult but she had much more strength in her legs than before the institution of this therapy.

Case II. A white male, aged fifty-seven, was first seen on December 10, 1926. He complained of difficulty in walking and weakness in both hands, which had been growing rapidly worse during the past four years. Prior to the onset of weakness in the lower extremities he suffered from periodic aching pains in his feet and ankles, and also occasional shooting pains which would extend toward the calves. He had done clerical work all his life and the weakness in his hands was first apparent when he had difficulty in holding his pen. He soon became unable to button his collar or shirt because of fatigue and weakness. Several months after the onset of the weakness he noticed that the hands had become smaller, the palms became flattened, the spaces on the dorsum of each hand became hollow, and both wrists dropped. This condition had persisted, and six months previously he became unable to walk because of stiffness and pain in the feet.

The family history was entirely negative. The patient gave a history of being married for eight years, but had been a widower for fifteen years. His wife had never become pregnant. There was a history of a chancre twenty-six years ago, which was treated locally. He used alcohol, tobacco, and coffee in moderation. He sustained a fracture of the left ankle fourteen years ago, and edema of the ankles had been present constantly but in slight degree for the past four years.

Physical examination showed that there was no tremor of the tongue. The teeth were in poor condition. There were a few enlarged cervical glands and some rigidity of the neck. The gait was broad-based, slow and spastic, more so on the right side. There was an intention tremor of both upper extremities. The grip was very weak in both hands. The extensors of the wrists were weak and there was a bilateral wrist-drop. There was bilateral paralysis of the adductor brevis pollicis, which was more marked on the left side. The left hand was of the ape type. There was marked weakness of both upper and lower extremities against passive resistance. There was atrophy of the hypothenar and thenar eminences of both palms and marked atrophy of the interossei, more marked in the left hand. He was unable to oppose the thumb and fingertips. There was a moderate degree of atrophy of the muscles of the forearms and legs. The left shoulder joint showed marked weakness, without any atrophy. There was an ankylosis of the left elbow joint, and both lower extremities were rigid. The deep reflexes of the upper extremities were diminished, being present only upon reinforcement. The deep reflexes in the lower extremities were brisk, the knee jerks and the right achilles jerk being hyperactive. The Babinski phenomenon was present on the right side.

The pupils were unequal, the right being dilated and larger than the

left. Both failed to react to light but reacted normally to accommodation. The left fundus was paler than the right.

The Wassermann reaction on the blood was negative, but on the spinal fluid it was positive. It was clear and contained 36 cells per cubic millimeter. The Ross-Jones test was positive.

This patient had received one course of anti-syphilitic treatment prior to December 11, 1926. Since that time he has received two courses each of neoarsphenamin and tryparsamid, each consisting of six intravenous injections, combined with mercurial inunctions and potassium iodid, but the condition of the extremities remains the same.

SUMMARY

There are certain clinical features and characteristics of this type of amyotrophic syphilitic meningomyelitis which are important and which stand out above the others, namely:

1. Syphilis is the most common cause of chronic spinal progressive muscular atrophy of the atonic type.

2. The reflexes are diminished or abolished in the extremities where wasting of muscles occurs and there is no sensory loss in most of the cases.

3. Bulbar symptoms apparently do not occur.

4. There may be interference with sphincter control, either bladder or rectal.

5. Early and vigorous antisyphilitic treatment may bring about an arrest of the wasting and weakness.

6. The presence of Argyll-Robertson pupils in amyotrophic syphilitic meningomyelitis does not necessarily mean a poor prognosis.

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ON A SOCIAL APPROACH TO NEUROTIC CONDITIONS

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The traditional modes of approaching neurotic conditions—at least those which go beyond mere enumeration, description and classification of unusual symptoms and are directed toward a study of underlying psychopathological mechanisms—have always led to a recognition of conflict or dissociation between the elements or part-functions that make up the individual's personality. The term "mental disorder" itself implies that the different components of an individual's "mentality" have lost their balanced relationship to one another, that there exists a functional disorganization.

When an analogous disorganization exists in the physical field, the first step beyond the merely symptomatic description has been a specific study of the structural and functional changes of the particular organ which, through its unbalanced and independent action, has disrupted the well-regulated activity of the organism as a whole. Interest has been focused upon the disturbed part, the seat of the primary lesion. In the field of psychopathology, too, paralleling the approach to physical disease processes, the emphasis has been placed upon one or another element of the individual personality, or upon the specific pathological *mental* mechanisms, which might be considered responsible for the condition studied. Thus in both fields—physical and mental—there is the conception that the unity of the organism and its balanced activity are disturbed through the disintegrative effect of a disordered part-function or single component that is out of relation to the whole.

A recognition that conflict exists in the "mental life" between the component parts of the personality is indicated by the use of such terms as resistance, substitution, repression and inhibition, ambivalence, dissociation, unconsciousness versus consciousness, etc. This internal disarrangement has been described or explained by the assumption of a conflict between various instincts, desires or wishes, a struggle between ego tendencies and social trends, or by a postulated antagonism between "self-preservation" and "race-preserva-

tion." In more behavioristic terms the situation has been formulated as habit-disorganization, habit-conflict, or inappropriate and incongruous conditioning of reflexes. From a psychobiological point of view, one considers rather the discrepancy between the individual's action-tendencies and his structural and functional assets. Or one may speak of the contradiction between the ideal which an individual wants to attain and the actualities of his real situation. Where the analogy with physical disease-processes has been adhered to more literally, there has been the attempt to reduce the mental and behavior disorder to a specific disturbance on the organic level; to look for its ultimate source in structural changes of body organs (especially central nervous system) or in the products of disorganized body function (toxins, endocrines).

But in all these instances, the cause of the mental disturbance has been thought of as localized specifically within the individual patient who presents the features of disorganization and maladaptation. The investigator has looked for a specific constitution or for a *locus minoris resistentiae* in the individual's make-up which, by causing an internal disarrangement, would explain the inadequate or distorted performance. Other investigators have pointed out that such a disorganization might be corroborated and activated through unfortunate traumatic occurrences and through the influences of especially unhealthy environmental conditions. But the essential responsibility has always been placed with the individual patient who failed to adapt himself to the requirements of the surrounding social milieu.¹

In recent writings Burrow has adopted a different position. He has emphasized the need to view the individual disturbance in its larger social setting. Following his investigations it is evident that the formulations, the codes and the type of interaction, postulated by and characteristic of the social environment generally, enter as determining factors in every manifestation and reaction of the individual personality. The single individual cannot be considered as a detached unit but he must be regarded as an integral element of a larger organization of living creatures, the typical characteristics of which are reflected in the individual's traits or symptoms. So that to obtain a comprehensive view of the individual neurosis it is necessary to include in one's approach an adequate appreciation and study of dissociative and disorganized processes as they occur in the social milieu. To quote Burrow: ". . . if we segregate an integral portion of this

¹ Though there is a limited consideration of environmental factors by the Mental Hygiene movement with its extended program, the emphasis is still left upon the individual and his symptom as the focus of disease.

social continuum and submit it to the process of an actual laboratory analysis, it is shown that this generic social consciousness is throughout a prey to phobias and obsessions, depressions and elations, inhibitions and compulsions, feelings of reference, grandiose ideas, suspicions of persecution and a hundred other classical symptoms that are the direct counterpart of those with which we are familiar in the individual patient."² "It is a startling fact, by no means recognized, that there exist definite conditions of mental disease within the individual which are directly corroborated and sustained by those composing the individual's milieu."³ "But, though of wider distribution, there underlies the expressions of normality no less of conflict and repression than exists in the acuter expression seen in the individual neurosis."⁴ If this position is correct, we need to shift our attention from the study of the individual neurotic disturbance and include in our therapeutic approach the social background of which the individual's reactions are but a result or reflection.

This initial step in the development of a more inclusive position in the field of mental disorders—the recognition of the phyletic implications in the disorder of the individual—has its analogy in the more recent development of the medical approach to physical disease-processes. While the interest of medicine was centered first upon the individual symptom and later upon the affected organ, the trend is now to include not only the study of the individual as a whole, but also the various phases and effects of his interaction with the larger environmental setting. Public hygiene attempts to determine the biology of the functional interrelation of the living element and its physical medium, to study the organization of the extraindividual circumstances causing and favoring disease-processes in order to afford a background permitting the wholesome function of the organism.

Nor is one limited in this analogy to the field of physical disease. Throughout the entire range of biology there has been the increasing recognition that "all living is interaction between a protoplasmic organization and the energies of an appropriate environment."⁵ The "influences of the environment" may even go so far as to become a

² Burrow, Trigant, "Our Social Evasion," *The Medical Journal and Record*, 1926, CXXXIII, 793.

³ Burrow, Trigant, "Insanity a Social Problem," *The American Journal of Sociology*, 1926, XXXII, 80.

⁴ Burrow, Trigant, "Psychoanalysis in Theory and in Life," *The Journal of Nervous and Mental Disease*, 1926, LXIV, 209.

⁵ Herrick, C. Judson, *Fatalism or Freedom*, New York, W. W. Norton, 1926.

determining element in the development of specific organic features. Thus, "the same set of genes may produce many different results, depending upon the conditions under which it operates."⁶ Hereditary abnormalities, such as deformed abdomen and imperfect joints between the segments, appear in fruit-flies (*drosophila*) if the animals live in moist air, but these anomalies do not occur in a dry environment. Other hereditary features, such as supernumerary legs and the number of the facets in the compound eye, depend on the temperature at which the animal develops. That the far-reaching alterations in the axolotl are dependent upon environmental conditions is generally recognized. Thus, for a proper functioning of the organism it is not only essential that the adequate materials be assembled "but equally essential is it that they should interact properly with each other and with other things. And the way they interact and what they produce depends on the conditions."⁶ Jennings concludes that in the entire sphere of biological phenomena "all characters are as certainly due to the conditions of the development as to the material of the germ cells," and to say "that a thing is hereditary signifies merely that an organism has received such a constitution as to produce it under given conditions." Thus we see that, even at the level of physiological growth, features of the chemicophysical environment enter as modifying and determining factors in the development of the individual organism.⁷

In any biological view of organic phenomena, there is need to consider the principle of integration which has been demonstrated in various scientific fields.⁸ This principle of integration we find expressed in the circumstance that various components enter into specific relation to each other and thus form a whole, the qualities and activities of which may be quite different from and not at all reducible to the characteristics of the constituent parts. The parts, on the other hand, lose to a greater or less degree their independence, their specific properties; they are modified through their relation to each other and through their participation in the whole. The combination may be so close—as for instance in many chemical compounds

⁶ Jennings, Herbert S., *Prometheus or Biology and the Advancement of Man*, New York, E. P. Dutton, 1925.

⁷ Dürken cites other examples where the chemical composition of the medium in which the development takes place is of great importance for the formation of the organism. If one adds a little sodium chloride to the water in which frogs' eggs are laid, a malformation of the brain and head results. In bees, the nutrition and the form of the cells in which the eggs are placed determine whether a worker or a queen will develop. *Die Hauptprobleme der Biologie*. München, J. Kösel and F. Putset, 1926.

⁸ Its existence in the inorganic sphere is not of primary interest here.

(H₂O)—that a separate consideration of the component part, structurally and functionally, is no longer possible. The significance of this phenomenon for the field of biology (formulated for the nervous system by Sherrington) has been pointed out by many writers (Jennings, Morgan, Parker, Ritter, Spaulding, Wheeler, etc.) and under different terms (emergent evolution, creative synthesis, progressive organic evolution). Adolf Meyer has emphasized the importance of the concept of integration in the more complex psychobiological organization of the human individual where the function of mentation is one of the characteristic resultants.⁹ Function and behavior of the individual may be considered "a specifically integrated type of activity of the cerebrally integrated organism."¹⁰ In this connection we are reminded also of the "*Gestalt*" conceptions which express a similar idea and which played a rôle in scientific thinking generally, long before Mach, Ehrenfels and many others (recently Köhler, Wertheimer, Koffka) applied them to more specific problems. All these formulations are expressive of the circumstance that various components arrange themselves into new and specifically characterized entities and must therefore be approached as constituent, integrated parts of the resultant organism.¹¹

The organization comprising the environment together with the individual organisms it contains must also be viewed in its integrative aspects. The close interaction between the individual element and its milieu is evident not only where simple chemicophysical factors are concerned but it is all the more intricately involved when the individual's function in the surrounding system of other living elements is considered. The dynamic qualities of this social integration and

⁹ Herrick expresses a similar thought: "Mind is a function of a particular configuration of bodily organs"; *Brains of Rats and Men*, Chicago, University of Chicago Press, 1927.

¹⁰ Meyer, Adolf, "Inter-Relations of the Domains of Neuropsychiatry," *Archives of Neurology and Psychiatry*, 1922, VIII, 111.

— "Objective Psychology or Psychobiology with Subordination of the Medically Useless Contrast of Mental and Physical," *The Journal of the American Medical Association*, Sept. 4, 1915.

— "The Contributions of Psychiatry to the Understanding of Life Problems." Address delivered at the celebration of the One Hundredth Anniversary of Bloomingdale Hospital, May 26, 1921.

¹¹ The integration of elements into new structural and functional units remains, of course, entirely within the frame of determinism. The endless possibilities of interaction of the constituent parts lead to ever new patterns which may be not at all or only in part predictable. This does not imply, however, that they are not wholly the product of the components themselves. A *creative determinism*, thus understood, does not call for the assumption of any forces or factors outside the component parts and their organization. A "freedom" based on unrelatedness and undeterminism can only be chaos and disorder.

the significant similarities or identities between the individual organism and society, as complex organized structures, have been emphasized by Child,¹² by Wheeler¹³ and others who have described the highly organized nature of animal societies. "That the social activities may present a very definite emergent pattern is most clearly seen in the nests of bees, wasps, ants and termites. These structures, though the result of the coöperative labor of most of the personnel of the colony, are nevertheless true *Gestalten*, being no more mere sums of the individual activities than is the diverse architecture of cities built by human hands. Not only does each species have its peculiar type of nest, but the nest of every colony of a species exhibits its own emergent idiosyncrasies."¹⁴

There are definite instances where the participation of the individual organism in a socialized system—the function given to the individual unit by its affiliation in the larger social whole—influences and determines not only the behavioristic but even the structural patterns of the single unit. Wheeler has pointed out that "There are, in fact, no truly solitary organisms"¹⁴ and that the result of intensive socialization does not always lead to progressive changes, but at times rather to degenerative individual features. He and others (Holmgren, Rosen)¹⁵ have shown that the supraesophageal ganglion or brain in old kings and queens of termites shrinks to one-third and also the eyes and optic ganglia undergo marked degeneration while the sympathetic ganglia increase to three times their original size. Some of the nervous structures and often also the pigmentation of the workers in the most highly socialized ants are less developed than they are in the workers of small and primitive societies.

These examples from animal life may serve as an illustration of the general biological principle that *what occurs depends on the conditions*. In the human individual, too, reactions and characteristics cannot be regarded as detached and independent manifestations. The single individual, being a determining interactive element of a larger social organization, is at the same time a "function" of this interaction and of the socially formulated codes and institutions that surround him. In so far as his personal characteristics are indicative of his attitude to others, or are in any way related to his activities

¹² Child, Charles M., *The Physiological Foundations of Behavior*, New York, H. Holt, 1924.

¹³ Wheeler, William M., *Social Life among the Insects*, New York, Harcourt, Brace, 1923.

¹⁴ Wheeler, William M., "Emergent Evolution and the Social," *Psyche*, 1927, No. 27, 28.

¹⁵ Cited from Wheeler, note 14.

in the social scheme, they are necessarily also an expression of these interrelations—necessarily influenced and directed by the quality and character of the social organization in which he participates, whether in agreement or in opposition. Though the individual's interconnection with the social organism is not as tight as is observed in other wholes or organizations (chemical compounds, for instance, where the elements have completely lost their independent qualities through their interaction in the new units), though the behavior of the interacting parts can be described separately, there is in this situation no less a determining influence through the necessary participation of the individual in the larger social system.

This close interrelation between the behavior of the individual and the social setting (an interrelation emphasized by the social sciences), has been interpreted as an interchange between detached and isolated entities, as the individual's *reaction to his living environment*. Hence an artificial division has been posited between those forces which constitute the social background and those embodied in the individual entity. But such a restricted interpretation means an evasion of the full import of the individual's social involvement. It means treating the social environment as something outside ourselves, as if we were not a part of it. In so far as the biological illustrations which were cited seem to corroborate a view which regards the individual and his social environment as separated factors, we have to leave this analogy and proceed now to a further consideration.

It has been the special contribution of Burrow's position, not only to emphasize that the individual is an integral part of the social organization, but also to bring out that he is contributor as well as resultant, that he is an active part of the influences he attempts to observe as well as the product of these influences. We lose sight of the fact that *each of us is environment as well as the individual who is supposed to adjust to the environment*. The artificial separation of the individual from the social medium of which he is a part inhibits the study and appreciation of the extent to which social suggestions enter as a determining factor in the structure of our every emotion and action.

In our human society the conditions have become more involved than we find them in animal organizations. For, in human beings, not only have function and interaction been objectivated and symbolized in the expressions of civilization and culture, in the codes of business, morality, religion, education, art; but, through his capacity of image formation, the human being has come to mirror or repre-

sent the surrounding social formulations and thus to carry his environment within him. This leads to complications that are not present in lower organisms. The human individual will take action not only towards the situation that really surrounds him but also towards the symbol or image of this situation existing in his own mind. The image of the social background, of its demands and of the individual's claim upon it, is ever present within him; it constitutes an essential part of every emotion he expresses and of every action he takes. These images become highly systematized so that there is in civilized society, as Burrow¹⁶ has pointed out, an overgrowth, a congestion of images, an elaborate pictorial scheme which is impressed upon the single individual, especially through his early contact with his parents, and which from childhood on plays an active part in every one of his reactions. Thus we assume too much in speaking of man's genuine drives or instincts or desires, when as a matter of fact all the activities, implied by such terms, contain, as a dynamic factor, artificial (substitutive) formulations and mental codes which the human individual has taken over through suggestion from the surrounding social organization. To disregard this important social involvement means to simplify these phenomena in a way that hardly tallies with the actual circumstances. Burrow has emphasized, for instance, how little we comprehend the really genuine instinct of sex;¹⁷ the manifestations of sexuality, as we know them, are influenced and determined by the images of the competitive and sophisticated interchange which is characteristic of the social system. We cannot, therefore, speak of "instincts" when we understand them only in their socially influenced expression and have not yet analyzed the bearing of this social factor.

To what extent—in the socially accepted interchange of normality—a genuine and direct function is replaced and distorted through the interference of artificial social images and suggestions, can be determined only by direct observation. Only an experimental and specifically adapted procedure may allow an adequate evaluation of the dynamic interrelation between the social background and the manifestations of individual dissociation and neurotic disorder.

Group investigations have demonstrated that in our approach to individual characteristics and performances, whether they are permanent or more in the nature of temporary reactions, we must include the larger phyletic pattern of which the individual is an inte-

¹⁶ Burrow, Trigant, "Social Images versus Reality," *The Journal of Abnormal Psychology and Social Psychology*, 1924, XIX, 230.

¹⁷ See note 4, page —.

gral part.¹⁸ Furthermore, we have to keep in mind a second consideration, namely, that the individual who attempts to look at this organic pattern, carries in himself, in his thinking and action, the very characteristics he claims to "look at." Any position or standpoint which does not definitely recognize this fact of the observer's own social participation cannot be true to actuality, must be merely theoretical, based on assumptions and premises which do not express the situation as it really exists.

There is, however, an overwhelming resistance on the part of the individual to accept the circumstance of his social dependence. The individual does not wish to recognize his interdependence with and his responsibility for phenomena in himself and others which in his personal estimation seem inferior and quite foreign to his own personality. Theoretically, perhaps, a social involvement is recognized by him. It is scientifically agreed that the individual's reactions are conditioned by the environmental circumstances. But this concept remains entirely in the intellectual sphere, in the sphere of theoretical social science and social psychology. It remains a concept which does not function, which has not really entered as an active element in one's consciousness. The scientist does not admit in the sense of a *feeling* conviction that his emotional reactions are a reflection of a socially induced and accepted system of prejudices, prerogatives and wishes, and that his behavior is largely dictated by the background to which he responds. The individual, in his own feeling, still considers himself as an isolated unit, self-dependent and "free."

The readiness with which the individual takes such an authoritative position reveals itself quite definitely in his mood-reactions. In most of our irritations, for example, there is expressed the assumption that the individual opposite us is able to control fully his actions, that he can change his emotions and wishes as he will and that the person irritated has the "right" and power to indicate the direction in which the other should mend his ways. Such affect-responses, which the scientist constantly experiences in his daily contacts and activities, definitely contradict the theoretical concepts which he has deduced from scientific investigation, and in which he postulates that the individual's behavior and performance are determined by natural forces. There is here an outgrowth of earlier cosmogenetic views which posit for the individual an all-powerful and magical position. This archaic residue is incorporated in the

¹⁸ Burrow, Trigant, *The Social Basis of Consciousness*, New York, Harcourt, Brace, *The International Library of Psychology, Philosophy and Scientific Method*; London, Kegan Paul, Trench, Trubner, 1927.

socially accepted scheme of morals and values which claim for the individual a position of unrestricted freedom and detachment, unlimited self-control and responsibility, resulting in an artificial interrelation of elements in which personal blame and praise find an adequate setting. Thus, patterns of human symbolization (specifically embodied in one's "ego"-image) claim an artificially separative function for organisms that really are closely interrelated and interdependent not only organically but also in their social substitution.

There is a discrepancy here which has not been fully realized. There are two conflicting factors at work: the first belonging to one's theoretical concepts and postulating the actual dependence of the single unit upon others and upon his interaction with the entire social system, and the other, resting in one's emotions, and positing arbitrary independence and license. This discrepancy means a definite dissociation in the individual personality, a conflict between life as it is interpreted in one's emotion and life as it actually occurs. Based upon experiments in group analysis, Burrow has drawn attention in various writings¹⁹ to the existence of such dissociations quite generally. He has drawn attention to the personal equations and improvisations which are always found in the structure of such discrepant attitudes, and he has emphasized especially that these personal prepossessions inhibit and distort likewise the outlook of the individual who attempts to observe human reactions. If the reasoning of the observer, too, is influenced by socially accepted and unrecognized self-deceptions; if he, too, cannot distinguish between what he actually does and what he presumes he is doing, how can we expect him to visualize and evaluate clearly in the patient incongruities and delusions that are identical with his own? "There are plainly observable within ourselves all the substitutions and improvisations that characterize the social mind elsewhere. But we do not challenge these compensatory improvisations as they are represented among members of our own profession. These unquestionable marks of an ill-concealed social neurosis existing within individuals of our own immediate social group are naïvely passed over by us, and the private and obviously compensatory improvisations that characterize the coloratura interpretations we presume to offer as scientifically controlled data meet with complete acquiescence on the part of this social group as a whole."²⁰

¹⁹ Burrow, Trigant, "The Heroic Rôle," *Psyche*, 1926, No. 25, 42.

— "The Reabsorbed Affect and its Elimination," *British Journal of Medical Psychology*, 1926, VI, 209.

²⁰ Burrow, Trigant, "Psychoanalytic Improvisations and the Personal Equation," *The Psychoanalytic Review*, 1926, XIII, 173.

If there is this social involvement in the reactions of the individual neurotic patient as well as in the attitude and approach of the individual observer, a specific technic of investigation is needed in order to meet this social situation. Everywhere in science methods have to be adapted to the specific manifestations which are under investigation. It would be quite theoretical and fanciful, in fact reminiscent of scholastic creeds, to expect, for instance, that physiological phenomena could be investigated adequately by methods adapted only to the study of electrons, or that the data of individual behavior and mentation could be treated satisfactorily by procedure and terminology employed in biochemistry. One cannot give a full account of any whole in terms of its elements.

Thus, manifestations into which there has entered the element of social substitution need to be approached by a procedure that is adapted to this level of organization. The group approach as worked out by Burrow and his students²¹ tends to meet definitely some of the specific features which characterize human reactions in their social integration. This procedure has been the outcome and result of needs that lie in the actual situation itself; it has, as any other scientific method, grown out of the demands of its actual material. It has not been artificially constructed upon intellectual calculations nor upon mere concepts or such theoretical considerations as may be deduced from what has been discussed for example in the preceding paragraphs.²²

In such an approach to human material, normal or pathological, two points have to be considered especially.

(A) It has to be kept in mind that social influences with their prejudices, discrepancies and self-contradictions are expressed not only in the individual observed but also in the investigator himself. There is the need to include the circumstance that the observer's instruments of examination, his observation and reasoning and emotional attitude are modified and biased in a way that is typical of the social system of which he is an element. "Scientific judgment" in the sphere of human reactions is not absolute, not self-dependent.

²¹ Burrow, Trigant, "The Laboratory Method in Psychoanalysis, its Inception and Development," *American Journal of Psychiatry*, 1926, V, 345.

²² It must be kept clearly in mind that an attitude of investigation which realizes the investigator's essential identity and interdependence with the material observed cannot take effect through mere intellectual acceptance of concepts. A *theory* of integration in the field of interindividual reactions does not necessitate at all the realization and enacting, in one's scientific approach, of the position theoretically claimed in the concept. We are here more interested in the actual attitude and approach than in the position intellectually posited.

nor fully reliable. Unconscious and personal evaluations enter into it; the wishes, self-deceptions and conflicts, which are active in the observer, necessarily becloud and influence his judgment.²³

(B) The socially dependent nature of the symptom which appears in the specific case needs to be recognized; there is need to see that it is an expression of the individual's interrelation to others and determined by the type of interchange which is characteristic of the general social structure.²⁴ Thus, for instance, a reaction of shame or self-consciousness can be taken as an indicator and resultant of the individual's temporary or permanent attitude to others. But, in addition, it reveals the nature of the social background which suggests and favors the conflict, the divided, self-opposed attitude that is contained in this emotional reaction—a social background that really embodies the same elements of dissociation. An analysis of such a specific manifestation, an evaluation and "placing" of it, must include in its scope the socially accepted mood and form of interchange which suggests and reënforces the individual reaction.²⁵

The interest of the group study, then, does not center around the individual symptom. It searches rather into the individual's attitude towards the scheme of living things and into the reciprocal attitude of the social system towards him. It attempts to establish the connection between the specific manifestation (socially sanctioned or not) and the individual's attitude and functional relation in the

²³ Symbolized, pictorial figures (parents and their social substitutes) which, being accepted uncritically in the patient's mind, guide his behavior, are also enacted, unconsciously, by the physician. Such image attitudes, definitely distorting the patient's outlook, disturb no less the reasoning and evaluation of the observer—they rather tend to corroborate the patient's essential disorder though there may be a palliative and symptomatic success.

²⁴ Social psychology emphasizes the influence of social pressure upon individual features; it has not proceeded, however, to actual experimentation with social groups.

²⁵ For an investigation that is undertaken in order to study the essential attitude of an individual to others (Burrow's organic psychology), many of the conventional distinctions are of little significance. For the determination of an existing mood, or relational attitude, it does not matter whether an emotion, say irritation, is expressed actually, in face or posture and other physiological characteristics, or whether it is entirely intellectualized and disguised in rational remarks and statements. Also the distinction between "normal" and "pathological" appears to be in many cases quite superficial. We may find the elements of delusional dependence, for example, in the normal response—agreeing or disagreeing emotionally—to the authority of socially accepted images (parent, caste, "success," etc.) as well as in a hysterical tantrum or in psychasthenic fatigue and inactivity. It is important to observe how these different manifestations are dynamically connected, how they influence each other and thus betray their functionally identical nature. The determination of this dynamic interrelation is not a matter of argument and discussion, but can be established only by experiment and observation.

larger social organization. To treat the specific phenomenon in a detached and static way, though this may be the conventionally accepted approach, would seem in this view quite artificial and theoretical.

The group method of observation has led to several practical modifications and innovations in the approach to human reactions. The observer places himself in an actual *group situation*. The circumstance in which only two people confront one another, the observer and the observed, physician and patient, does not offer a favorable opportunity for a clear view of the inter-individual involvement and for the scrutiny of unrecognized (unconscious) social implications and suggestions. The contact is too acute. It necessarily embodies too much a repetition of collusions and emotionally toned interactions that are constantly enacted by each of the participants in his everyday contacts and not submitted to observation. In such a bipolar situation it is not possible for the observer to acquire the needed perspective; he cannot correct the deviation in judgment of his own habitually biased emotional position. No one is inclined, without special reason, to question his own basis. In fact, any argument or discussion, such as easily arises in an interview between two persons, tends to corroborate the uncritical stand of each.

In the group situation, on the other hand, where a number of people are assembled, the opportunities for recognition and inclusion of the personal factor are more favorable. Where the ever-present prejudice of the investigator is definitely open to inquiry, a self-questioning mood more easily develops. A setting in which self-contradictions, self-deceptions, and other fallacies of the socially accepted egocentric position are consistently observed in the reactions and statements of other participants—such a situation suggests and facilitates an inclusive attitude that questions one's own findings and evaluations.

That the group technic affords the possibility of correction for one's personal equation or error in no way implies that it is a statistical method. It is not a collective procedure which assembles opinions and calculates the collective, numerical average. It may rather be called an integrative technic of observation which, through actually demonstrating personal discrepancies as well as mutual interdependence, affords the opportunity to eliminate gradually the partiality and restriction of judgment that is based on the arbitrarily assumed position of autocracy for which the individual has the support of his protective social surroundings.

The group technic is concerned with *immediate* material; it

endeavors to observe the mood and reaction of the immediate moment and in relation to a concrete situation. It has been the experience that the actual demonstration of one's attitude toward others at the moment it occurs is of far greater significance than recourse to philosophizing and discussion of manifestations that lie in the past or in the future. An investigation, then, of the actual position and function of the individual in his living environment cannot rely upon accounts or reminiscences only, on memories of past happenings, or on reports of childhood experiences. The vital interest lies in the immediate situation, in the attitude as it is demonstrated (expressed through bodily movements or through words) at the moment of investigation. The presentation of past material or the discussion concerning possible future situations may be illustrative and may have its place, but here it is interesting only in so far as it evidences the immediate inter-individual mood situation (regret, excuse, wish, hope, etc.). The experimental observation is concerned with what actually exists and not with what has been, may be or should be. Theory and discussion, in this technic, usually mean evasion, indicate the entering upon substitutive grounds and the abandoning of direct, experimental procedure.

If an investigation proceeds to determine the position which an individual actually occupies in his social environment, to study the elements which individually and socially enter into it, and the influence which his attitude may have on the structure of his feeling, thinking and acting, it will not suffice to deal only with the *appearance* of human reactions. The interest lies not so much in the specific form of the manifestation (symptom) but in the underlying mood and in the nature of the inter-individual attitude and function. The diversity and the disguise in the expression of wishes, motives and attitudes, as long sensed by students of human behavior²⁶ and more technically studied by the psychoanalytic school, must definitely be recognized. The group technic must be an *analytic approach*. Those mechanisms which psychoanalysis and psychiatry are concerned with in the study of pathological conditions, must here be clearly recognized in the socially accepted manifestations of the normal as well. The group situation permits a conscious acceptance of the fact that reactions which contain elements designated by such terms as dissociation, substitution, projection, transference, etc., are typical not only for the neurotic patient but also for normal social behavior. They are evidenced in the habitual emotions of one's everyday con-

²⁶ Note the common root of the terms: *mentatio*, *mentire*.

tacts and in the traditional forms of one's intellectualizations.²⁷ If, however, the analytic principle is a necessary requisite of this technic, it does not follow that any analytical *theories* (of libido, regression, complexes, etc.) have to be employed or developed. Such theorizing would mean merely another form of intellectual substitution and would again lead away from a direct observation of the immediate material.

The inclusion of the observer in the social scheme, his participation in socially accepted delusions and substitutions together with the individual whose reactions he is observing, places him in a quite specific position when he undertakes to investigate material which is socially integrated. Accordingly, the prerequisites for such an investigation differ from the prerequisites for the study of differently organized material. The observer whose own mood and whose sphere of feelings are under the influence of social suggestion, cannot take the detached position which is very serviceable in other scientific procedures. He cannot remain in the rôle of the mere onlooker if he takes his own social involvement as an actuality. His stand may no longer be an absolute and removed one; the platform from which he is speaking does not enjoy unquestioned fixity and authority. The attitude which the investigator must necessarily adopt in group investigation has been characterized by Burrow as *inclusive*, based, that is, not on mere intellectualizations but on a specific mood or feeling attitude. However we may term this situation, it has to be quite clear that the social factor in the individual's activities, especially in the discrepancies and incongruities of his reactions, can be adequately studied only if the observer himself is willing to accept the existence of a socially induced element of substitution and replacement in himself. Such an inclusion on the part of the observer cannot be effected by mere intellectual calculation and verbalization; it becomes real and functioning only in so far as the concept has entered as an active, integrated element into the structure of one's feeling and action.

²⁷ An especial consideration of the factor of substitution—in whatever form it occurs—is urgent as we find an inappropriate symbolic replacement (substitution) as an outstanding factor in the manifestations of mental disorder. In the phenomena of projection, reference, delusion, hallucination, etc., there is a substitution in symbolic form for actual situations and relationships resulting in interference of biological function and coordinated activity. The significance of the substitutive factor is easily overlooked when it occurs in socially pleasing forms, just as the fictitious nature of the transference attitude and its relation to pathological conditions is not recognized when it is objectivated in mutually accepted rôles with their convincing love-hate alternation.

FAMILIAL FORM OF ENCEPHALITIS PERIAXIALIS DIFFUSA

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(Concluded from page 498)

Differential Diagnosis:

From the point of view of differential diagnosis, the encephalitis periaxialis diffusa has to be separated from the multiple sclerosis by the fact that the lesions in encephalitis periaxialis are widely diffuse to the nervous system and so intensely as to give to the whole white matter the general peculiar aspect seen in the figures of the gross specimens, an aspect which is quite different from the one seen in multiple sclerosis. On the other hand, multiple sclerosis is localized to patches and only exceptionally large confluating areas have been reported. In multiple sclerosis patches of sclerosis have been described, involving the cortex, which circumstance is totally absent in my cases. The symmetry of the lesions is also an important factor, as in multiple sclerosis the patches of sclerosis do not show the perfect symmetry which is so characteristic in the cases I have reported. The rather wide destruction of axis cylinder is also somewhat different from what happens in multiple sclerosis where a large amount of the axones are preserved. It is true, however, that some authors have reported destruction of axis cylinder in multiple sclerosis but in encephalitis periaxialis this destruction appears much more diffuse. The absence of patches of sclerosis in the brain stem and spinal cord is also quite against the diagnosis of multiple sclerosis.

The diffuse glioma constitutes also a picture from which differential diagnosis has to be made. In my cases there was no record of increased intracranial pressure and no choked disc was reported. The exterior configuration of the brain was preserved and conversely there was a quite marked reduction in the brain weight. On the other hand, in the perivascular spaces the presence of so many scavenger cells as well as free myelin bodies is somewhat unusual in the gliomatosis where the glia proliferation predominates over the degenerative changes. The tendency of the glioma is also one of breaking through rather than reinforcing the demarcation membrane of the vessels, a process of which there was no evidence in my cases. Cavity formation and softenings are also characteristic features of gliomata, fea-

tures which I did not encounter. The gliomata finally show a tendency towards infiltration, which condition is quite absent in my cases, the boundaries of the affected areas being quite sharply established by the arcuate fibers.

* . . . *

Familial Relations of the Disease:

I have found no mention in the literature of familial cases of encephalitis periaxialis diffusa in adult life. The only paper dealing with the description of a familial form is the one of Krabbe in which the disease was described in children who died shortly after its onset. From the histological point of view I believe that the fundamental lesions of the Krabbe cases are identical to the one of encephalitis periaxialis diffusa. The time of appearance of the disease does not interfere with its pathological nature, and this particular reason adopted by Krabbe to differentiate his cases from the Schilder form does not seem to me strong enough. That in degenerative diseases we can find cases of the same affection which manifest a different period of age is proven by the so-called familial amaurotic type of idiocy in which, next to the infantile form of Tay-Sachs, a juvenile form has been described with the same fundamental pathological lesions (Vogt-Spielmeyer). The familial factor in Krabbe's cases was of course of greater importance in the attempt at differentiation but this criterion does not seem to me to hold any more, as the familiarity of the disease has been ascertained in my cases and mentioned also in Haberfeld and Spieler's, one where a brother's patient was reported by the family as being dead from a similar disease. This proves that the familial character may show up at different ages and that the Haberfeld case dealing with a seven-eight years old patient may sign a transition between the young and adult familial forms.

As far as the degenerative features of the Krabbe cases are concerned they are quite often encountered in encephalitis periaxialis diffusa, and Bouman, who has made a survey of the whole literature, points out that the first case of Schilder and the cases of Marie and Foix, Hermel, Klarfeld, Kaltenbach, and his own cases, all showed simple degenerative features. The cases I reported did not show either inflammatory lesions, with the exception of localized perivascular infiltration in which Abbau cells and lymphocytes were collected. But we must not forget, as I said, that this manifestation is not always the expression of a true inflammatory disease but may also be the expression of a symptomatic inflammation (Spielmeyer) or reparative inflammation (Aschoff). Such a type of symptomatic

inflammation has been reported by Spielmeyer in the Tay-Sachs disease, where we all agree as to the degenerative nature of the pathological process. Scholz is the next author who has reported familial cases of diffuse sclerosis. Although he tries to differentiate his cases from the Schilder's form, I do believe as I have already said that the Scholz cases are cases of the Schilder's type in which the disease was detected in young as well as in adult patients. My cases do not represent them.

The familiarity of the cases I have reported opens a new field for discussion of the relationship between this familial form of encephalitis periaxialis and a very rare disease which was described a long time ago by Pelizaeus and later on pathologically investigated by Merzbacher. It was called "aplasia axialis extracorticalis" or "Pelizaeus-Merzbacher" disease. Krabbe has already mentioned the pathological affinities with this special disease and his own cases, and I do really think that the comparison was quite justified. It was mainly the fact that Krabbe's patient died very soon after the onset of the disease which determined this author to discard the analogy of the two forms as in the Pelizaeus-Merzbacher disease, although the affection begins in the very early stage of life it has a very long course of ten, twenty, or more years. But this objection does not seem sufficient to rule out the analogy, as I have already mentioned the fact of the two varieties of the Tay-Sachs disease, the infantile and juvenile forms which have been considered by Schaffer and Spielmeyer as being fundamentally the same, although appearing at different periods of life, the infantile form being the severe type, and the juvenile form representing the attenuate type of the disease.

In the Pelizaeus-Merzbacher form we may also find varieties in intensity, the Krabbe form representing perhaps the severe type and the Merzbacher form representing the attenuate one. May we now look at the familial form of encephalitis periaxialis diffusa as a disease closely related to the Pelizaeus-Merzbacher one? Although I cannot answer definitely that question, I feel that from the pathological point of view there are great affinities between the two processes. In both the forms the process involves diffusely the white matter, the resulting demyelination being topographically very much the same. In both the forms the arcuate fibers appear uniformly spared. In both the forms the division of the lesion is symmetrical in type, involving the myelin sheaths as well as the nerve fibers. In both cases, finally, there is a marked active gliosis and gross preservation of the cortex.

The fact that the degenerative process in my cases is still active is not a valid objection to the relationship of the two diseases, as

Globus already pointed out in his cases of amaurotic idiocy, which he compared to the Pelizaeus-Merzbacher disease, that there were quite active degenerative changes in the white matter. On the other hand, Schaffer, whose competency in heredo-degenerative diseases is well known, believes that in the Pelizaeus-Merzbacher form the conception of "aplasia" has not yet been proved. Finally, in a case of the same Pelizaeus-Merzbacher disease, Spielmeyer reported the presence of a quite diffuse and active degenerative process of the white substance, concluding that in this disease we deal with a long progressive and diffuse process—which statement would support the possible connections between the Pelizaeus-Merzbacher disease and the familial form of the encephalitis periaxialis diffusa.

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SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY

REGULAR MEETING, TUESDAY, OCTOBER 4, 1927. LOUIS CASAMAJOR,
M.D., VICE-PRESIDENT, IN THE CHAIR

COMPARATIVE STUDIES OF THE SURFACES OF ENDOCRANIAL CASTS OF MAN AND PREHISTORIC MAN

DR. ARTHUR WEIL

[*Author's Abstract*]

For the measurement of endocranial casts a new apparatus has been devised. With its help the whole surface is subdivided in parallel stripes, the outlines and distances of which are measured and used for the calculation of the plane of these different stripes.

The endocranial casts of the following skulls were investigated: Normal man, Predmost, La Chapelle-aux-Saints, Rhodesian, Piltdown, Trinil, and, for comparison, that of an adult male gibbon. These are the numbers found for the endocranial casts, corresponding approximately to cerebral and cerebellar surfaces:

	Cerebral Surface Left, Sq. Cm.	Right, Sq. Cm.	Difference between l and r, in %	Cere- bellum Sq. Cm.	Total Sq. Cm.
Man.	303	306	1	95	704
Predmost.	327	327	0	104	758
La Chapelle-aux-Saints..	337	339	0.6	86	762
Rhodesian.	303	303	0	79	685
Piltdown.	276	261	5.4	88	625
Trinil.	224	225	0.4	78	527
Gibbon.	42.6	42.9	0.4	19.3	105

In measuring these parts of the casts which correspond to the bones originally discovered it was found that newly reconstructed surfaces were: In Piltdown, 53 per cent; Trinil, 39 per cent; Rhodesian, 14 per cent.

For the comparative study of parts corresponding to fossils, the cap of the cast only was measured. It was limited by a horizontal line connecting the protuberantia occipitalis interna with the fronto-temporal angle and continued along the base of the frontal lobe. Three lines were erected perpendicular to this base line: I, at the fronto-temporal angle; II, at the vertex of the posterior-inferior angle of the temporal lobe; III, at the cerebello-temporal angle. The cap of the endocranial casts was divided into four regions by these three lines. Measurements of the four divisions showed that the frontal part is most developed in man, and next in Piltdown. Region 2 is

larger than 3 in man and Rhodesian, equal to 3 in Predmost, and smaller than 3 in the other casts. The following tables give absolute and percentage distribution:

	Left Regions of Cap of Cast in Sq. Cm.				Total Sq. Cm.
	I	II	III	IV	
Man.	59.5	44.7	36.6	84.8	225.6
Predmost.	55.0	50.8	53.1	84.7	243.6
La Chapelle-aux-Saints.	52.4	45.7	47.4	100.8	246.3
Rhodesian.	47.7	40.1	36.4	71.2	195.4
Piltdown.	58.0	33.3	47.4	68.5	207.2
Trinil.	35.7	32.3	37.8	52.4	158.1
Gibbon.	6.2	5.1	9.2	7.0	27.5

	Percentage Distribution				Total in % of Cerebral Surface
	I	II	III	IV	
Man.	26.4	19.8	12.2	37.6	75.6
Predmost.	22.6	20.9	21.8	34.8	74.5
La Chapelle-aux-Saints.	21.3	18.6	19.2	40.8	69.9
Rhodesian.	24.4	20.5	18.6	36.5	64.5
Piltdown.	28.0	16.1	22.9	33.0	75.1
Trinil.	22.6	20.4	23.9	33.1	70.7
Gibbon.	22.6	18.5	33.4	25.5	64.6

Next, the part of the surface of the endocranial casts anterior to the first branch of the meningeal arteries was measured. The results, expressed in percentages of the total surface, were approximately the same for all casts. Outlines of sections through the casts in the three different planes were constructed with the help of wax rods. The largest diameters of such sections were measured and compared. Horizontal sections showed a close resemblance between man and prehistoric men, while in sagittal sections the height was larger in man and Predmost than in the rest.

Finally, the different relations between different parts of the cap of the casts were expressed in percentages of the normal standard, 100, of modern man. The plus and minus deviations from the standard were represented in curves and the mean value with standard deviations calculated. The sequence of approach to the modern standard was: Predmost, 108.32; Rhodesian, 110.0; Piltdown, 110.06; La Chapelle-aux-Saints, 111.62; Trinil, 116.30; and Gibbon, 126.10.

Discussion: Dr. Louis Casamajor: Dr. Weil has added some more evidence of what primitive man was like. We know considerable of his habits, especially from the implements of his life which he has left behind. Naturally we want to go further. Dr. Weil has offered us a method of approach to the visible cortex, but just what that means in primitive man, in modern man, or in any of the lower animals is something which remains in the future. The angles formed by his lines and the relations between the various parts of the cortex are of interest and one would be interested to learn if these show any differences in different races. Likewise one would like to know if

these relationships would show any differences between the mental defectives and the so-called normal man. I have been wondering whether Dr. Weil has tried to apply his methods of measurements to the brain of any of the lower animals with the view to determine whether there is any connection between the measurements and the conduct of the animal.

Dr. H. A. Riley: I am very much interested in Dr. Weil's presentation. During the time that Dr. Tilney was working on these intracranial casts I had the opportunity of going over them with him, studying them as far as possible. I have a great deal of sympathy with any attempt to find out anything we can from the examination of this material, and yet it always seemed to me that it was necessary to speak with the utmost conservatism in regard to any conclusions which might be drawn. Dr. Weil has spoken of the fragmentary character of the skulls which have been found, and this shows very well on the casts where the original material shows itself in contrast to the part which has been supplied by man's art. So far as being able to identify landmarks is concerned, practically all one has on these casts are the markings of the meninges which do not necessarily have any definite relationship to the underlying cortical geography. There is very little indication of convolucional outline in any of these casts, though in some of them some degree of convolucional form can be found in the frontal and parietal regions; but as I remember them, very little in the occipital, so that while one can determine the position of the Rolandic fissure with some degree of accuracy in relationship to the markings of the meningeal vessels in the dura, it is practically impossible to make any definite decision as to where the markings with which we are so familiar on the cortical surface of the brain should be located on these casts. I am at a loss to understand why the posterior area was marked off by the angle between the cerebellum and the under surface of the temporal lobe, because of course that is absolutely no index of the occipital area. The occipital area is limited cephalically by a line drawn between the incisura pre-occipitalis and the fronto-occipital sulcus, as it appears upon the convexity; and therefore has no relation to the position of the cerebellum. The cerebellum in its relation to the cerebrum depends upon the axis of the approach of the brain stem to the hemispheres.

It may be of some personal interest to know that when Dr. Casamajor and I were in London last summer, at the meeting of the American Neurological Association, we went out to the Museum of Natural History in South Kensington, and saw Mr. Pycroft, who has done so much of this work on prehistoric skulls, and as a mark of special favor to us they removed this Rhodesian skull from the safe and allowed us to look at it and examine it. The skull itself is a very remarkable one. It is absolutely complete except for the fact that the mandible is gone, and the squamosa is deficient on one side. Mr. Pycroft said himself that it was an act of Providence itself that that portion of the skull was gone, for the absence of the squamosa allows an easy investigating of the entire intracranial surface, and no one

would have had the temerity to cut an opening in a perfect skull. The skull is an enormous one, and the teeth splay out at an oblique angle, rather than being projected downward as they are in modern man. It is very heavy because it is impregnated with metallic salts. One of the interesting things about it was the evidence of disease in the individual who possessed the skull at one time. The entire alveolar process was riddled with caries. The external lamina of the alveolar process covering the roots of the teeth was eaten away in many places. In the intact squamosa there was a round hole, the edges of which were fairly smooth and raised up, as though there had been an epidural abscess in the region of the middle fossa which had gradually produced an osteomyelitis and broken externally.

Dr. Weil: I only took the measurements of endocranial casts of prehistoric man, as Dr. Tilney was kind enough to allow me to copy from his collection. I think Dr. Casamajor's suggestion is one which should be followed up. I can only emphasize what Dr. Riley said, that one is not allowed to draw any conclusions from the position of the meningeal arteries as to the position of gyri and sulci of the brain itself. The problem was not taken up from this point of view. The problem was to obtain certain relations between well defined parts of the casts, the mathematical side of which could be compared. I did not express any opinion as to the position of the gyri or the sulci of the brains themselves. Therefore, if I used the terms "occipital" or "frontal" I did not want to express any opinion as to the size of corresponding parts of the surface of the brains of prehistoric men. I only wanted to indicate the relative position of the three lines constructed in the casts. I think, if we take the problem from this point of view and only compare such relations without going into discussions about the configuration of the brain itself, it may be possible to get some idea whether these endocranial casts are similar to one another or not.

A CASE OF MULTIPLE SCLEROSIS WITH AN UNUSUAL SYMPTOM

I. S. WECHSLER, M.D.

[Abstract]

This twenty-four-year-old man presents two rather unusual symptoms. Other than a healed tuberculosis and a typhoid attack the past history is negative. Two and a half years ago the present condition arose with numbness of the left lower extremity. Following that he complained of a peculiar electrical sensation going down his spine and the lower extremities. He gradually developed diplopia, spasticity, increased deep reflexes with the Babinski sign, clonus, absent abdominals, nystagmus, and occasionally tremors. On walking he has a tendency to whirl about from left to right. He walked in a wide circle, always from left to right. Another unusual symptom is sudden myotonia on attempting to perform a quick movement. This occurs only in the left arm. If asked to perform the F. N. test he does

it well if done slowly, but if done quickly the arm becomes rigid. He cannot feed himself with that hand unless he does it very, very slowly. The third spectacular thing is that in the dark he can "light" an electric bulb with his hands. All the laboratory tests are negative. The Barany tests are negative. The fundi are probably normal, though there is a slight pallor of the left disc. He has no visual disturbances and no sensory changes. He speaks of having had some sensory changes, but there are none at present. He has no vestibular signs. Presumably his symptom is cerebellar in nature, and yet he shows few, if any, cerebellar symptoms objectively. I do not know what to make of the myotonic symptoms. I may add that he gets similar stiffness of the limb from a sudden psychic or emotional upset.

And now I should like to demonstrate a more or less spectacular performance, which the patient attributes to his feeling of the electric sensations on which he harps so much, namely, his ability to get a glow from an ordinary incandescent lamp.

Discussion: Dr. H. A. Riley: I hesitate to express an opinion but it seems to me that the burden of proof rests entirely on the defense to prove that this is not a functional condition. I have never seen anything like this in cerebellar disease or in cases of multiple sclerosis. I have never seen it in cerebellar animals with cerebellar ablation. The only thing I have seen, anything like this, is the effect of rapid rotation of guinea pigs where, as a result of the turning, they rotate extremely rapidly on their long axis. I think the question of this being an organic symptom is open to considerable doubt.

In regard to the myoclonic cessation of movement, I think that also is open to some criticism, and I would like to see this patient try to catch a ball which is dropped vertically so that he would have to catch it from the side before I would be at all certain that the patient's condition is due to any myoclonic action on the part of the musculature. I have nothing to suggest in regard to lighting the bulb, except I would like to see Doctor Wechsler try it himself. At any rate, as far as I could see, he did not light the bulb; there was no glowing of the filament inside of the bulb. I think it was simple surface frictional electricity spreading over the surface of the frosted bulb and causing it to glow.

Dr. Louis S. Aranson: I would agree with what Dr. Riley said about frictional electricity, but we saw the tungsten filament light up in the dark from where we sat. Besides his multiple sclerosis he seems to possess hysteria, separately.

Dr. S. Philip Goodhart: I have no inflexible opinion as to this case. To me it is not psychogenic in any of its phases. The rotary whirling with such force is unique in my experience. The seat of pathology I incline to place in the cerebellum.

Dr. Wechsler: I am glad that Doctor Goodhart said what he did, because we spoke about that, and the reason we did not think it might be of psychogenic origin is that this man has an organic disease of the nervous system, and secondly, we have been unable to show any psychogenic origin as a cause for it.

In confirmation of what Doctor Riley says, the patient is an electrician, he is rather intellectual, but he is given to emotional outlets. Whether that is a psychogenic thing or a true thalamic symptom I do not know; but the idea occurred to me whether we could not turn this thing around, assuming a disorder of the nervous system for the ordinary astasia abasia; there may be an organic explanation for that, rather than thinking the man has a pure hysteria, such as is shown by these symptoms. Is it not possible to think that with certain symptoms of chronic encephalitis (which we know are not hysterical) and certain tics and certain turnings which are usually called psychogenic, one may not assume from this case that the astasia abasia is really due to some organic lesion? The conception is not at all novel. Wilson has attempted to explain hysteria in terms of decerebrate rigidity. Perhaps this is one possible explanation of the symptoms which we ordinarily would designate as hysterical.

Dr. Riley: I do not mean to imply that this case is entirely a functional case. I believe those two symptoms can be a functional superstructure on an organic basis.

TWO CASES CHARACTERIZED BY INVOLUNTARY MOVEMENTS

S. BROCK, M.D.

[Abstract]

The first case is that of a boy of nineteen, who at the age of nine years developed involuntary movements. These began with blinking of the eyes, facial grimaces, stuttering, and twitches in the shoulders. For the last ten years he has shown a picture which has varied from time to time. There have been remissions and exacerbations. He shows a fairly *pure* type of involuntary movement, a myoclonic twitchlike movement, which is ticlike or myoclonic. These are fairly lightning-like muscular contractions involving the musculature of the upper half of the body, neck and head. The eyes close; the head is turned around rapidly; the jaw is moved up and down; the pectorals twitch. There is a laryngeal tic and it interferes with speech. The affection does not involve the lower half of the torso nearly as much. I present this boy largely as a prelude to the next case, because of this pure type of involuntary movement. His neurological status is entirely negative except for those movements. His I.Q. is low. Whether that is due to poor educational facilities or a bad native endowment is not settled in our minds. We would like to present him as a case of generalized tic, the *malada de tic* of the French. We believe there is an organic basis of this disorder.

The second case is that of an unmarried girl of twenty-four, who has had a rather checkered career since the age of fifteen. I bring this matter up, because it may have some bearing on the diagnosis and prognosis. She was an orphan who ran away from school and joined a theatrical troupe. At the ages of seventeen, nineteen, and

twenty-one she had abortions performed. In August, 1925, she acquired lues. Under observation at the Montefiore Hospital she has shown a considerable degree of emotional instability, so that she might well be regarded as a type of constitutional psychopathic personality. The other elements in her history are that in 1918 she had what was called influenza. There is a history of diplopia recurring from time to time, but no other post-encephalitic phenomenon. She is hazy about a very important point, *viz.*, some time in 1918, either before or after this influenza, she slept a great deal. She would fall asleep in the schoolroom and be scolded by her teacher. Her memory is bad and she cannot tell us whether this preceded or followed the influenza. She recovered entirely from the influenza; but in 1921 she had "tremors of the legs." They apparently disappeared, and the present condition began about a year ago (October, 1926), following an operation for a diseased appendix and hernial repair. She began to shake; this came on acutely, and she has been presenting this group of involuntary movements ever since. I have seen her both at Bellevue Hospital and Montefiore Hospital over a long period of time. In contradistinction to the first case she shows a veritable symphony of involuntary movement. The head is thrown back in a myotonic tic-like manner; the jaws move from side to side; there are various clucking sounds made by tic-like movements of the tongue and mouth. At times when the head is thrown back, the eyes will rotate upward. The sterno-mastoids throwing the head from side to side and bringing it forward in a dystonic manner seem hypertrophied under this constant activity. Her upper extremities show a coarse rhythmic element in some of her movements reminiscent of Parkinson's disease. Often there are wild fling-like movements of the upper extremities in front of the chest. The neck presents a fairly constant coarse rhythmic tremor; sometimes both hands are pronated and show a choreo-athetoid pattern. The speech is interfered with. She walks on the outer sides of her soles, and the feet have an equinovarus posture. She shows a dystonia. The attitudinizing and dance-like gait are reminiscent of Huntington's chorea. Her neurological examination is entirely negative.

Dr. Kraus: It would be very interesting to have her lie down on a flat surface; the picture changes a good deal.

Dr. Brock: In lying down, the dystonic foot comes out. Her blood Wassermann and spinal fluid findings are now entirely negative. I will say in order to give direction to the discussion that she is presented as a case of uncertain etiology, probably chronic encephalitic, perhaps luetic. We hesitate to give a name to her disorder because it is too polydyskinetic. In the present unsatisfactory state of our nomenclature, we may simply refer to it as a polydyskinetic syndrome.

Discussion: Dr. Philip R. Lehrman: How soon after the operation did these movements come on?

Dr. Brock: They appeared during the convalescence.

Dr. Kraus: I had the privilege of seeing this case on the wards of Bellevue Hospital. There was at first a little doubt in the minds

of some members of the staff as to whether or not the condition was primarily organic, but after a short time that doubt was very definitely and permanently dispelled. I think that if one has seen a great many cases of *dystonia musculorum deformans*, one has the impression that this girl belongs in that group. This reminds me of an experience at Montefiore Hospital last year when five cases of chronic chorea were brought together at a conference. Each one of these cases of chronic chorea looked a little bit differently, once we got them all together, but each one separately was very definitely a case of chronic chorea. The same thing applies to this case. It looks very different from other cases which we call *dystonia musculorum deformans*, but that does not mean that it should not be put under the caption of that disease.

Dr. Michael Osnato: We are apt to forget that in hysterical manifestations of any severity there are objective symptoms. I fail to recall just now any hysterical patient who was as disabled as this patient is, who did not show objective somatic sensory or motor hysterical phenomena. I mean the anesthetics, and the special sense disturbances that we know so well, especially of the visual fields and the various auditory phenomena. They are absent in this case, and I think that fact should receive a great deal more attention than it has. I find them present almost invariably especially in post-traumatic cases. I agree with Doctor Kraus and Doctor Brock that this case can be very well placed in the group of *dystonia musculorum deformans*. I think also that until we know a good deal more about the pathology and the natural history of dystonia that we ought to conserve the term and apply it only to that very definite group entity which Ziehen first described and Oppenheim later elaborated. There are cases such as this one which do not exactly fit the classical picture but which undoubtedly belong in that general group. All of us have had the experience of seeing cases which presented residuals of epidemic encephalitis when examined, who had never been ill enough to go to bed and in whom the history of the ordinary symptomatology of epidemic encephalitis was extremely difficult to elicit. In view of that fact I believe both cases may be looked on as probably post-encephalitis.

Dr. George H. Hyslop: The case of the girl together with others of its kind always leads to a dispute which is interminable; and in those in the discussion of which I have participated, I have seen only one or two in whom one very important test has been applied, and that is submission to the gamut of direct and indirect suggestive therapy. One might find psychogenic factors as the result of some sort of analysis. You cannot, however, prove these to be etiologic factors in a thing like this unless you get a therapeutic result. We do not know of any organic pathology which would account for this girl's behavior any more than we know of any pathology which would account for what appeared in the boy with multiple sclerosis. These patients are in an environment which induces exhibitionism, they are all worse when under emotional stress, which is true in cases of either organic or psychogenic origin. There is much frontal lobe display

in the girl's "hyperkinesia." So far as I know, there is no tonus disorder. There is no real dysynergy of the sort you can attribute to the basal ganglia or cerebellar pathway disease. I would hate to call her an organic case without having submitted her to adequate suggestive therapy.

Dr. Junius Stevenson: I was the first one to see this case. I do not question the probable organic basis. There is no question in my mind that there is a functional element. This girl's movements are quite different from what they were at Bellevue. When I saw her on her admission to the Neurological Service, she was typical of the "Charleston" dance while she was there. During our observations and discussions, various men made different suggestions, and she developed movements suggestive of these things. I believe that her movements are the result of suggestive examinations. I do not believe that she is in the category of dystonias. I do believe there is a probable functional overflow. We never considered her hysterical. Almost all of her movements are purposeful. The movements in hysteria are not. I think if this had been hysteria, she would have been well before this. We did try suggestive therapy, and we tried hypnosis, but we could not get her under. This girl has gone through three separate series of movements.

Dr. Russell MacRobert: I have seen this second patient of Doctor Brock's before. I would like to call attention to the point that her movements in progressing across the room have a certain rhythm, an almost musical rhythm. In fact her walk up and down before us here is actually the performance of a solo jazz dancer. Perhaps the psychoanalyst might discover that she was acting out in this mobile disorder her thwarted desire to be a famous dancer. To-night she surely appears to be deriving pleasure from her exhibition. And then she proceeds back and forth in dangerous proximity to these desks, shaking off proffered assistance, missing everything, and not hurting herself at all. That's evidence for psychogenic motivation, is it not?

I think it would be impossible to demonstrate, as Doctor Osnato suggests, the presence or absence of corneal and pharyngeal anesthesia in a patient going through such constant contortions and spasms. There is probably some organic change in her nervous system; but to present this performance as a consequence of organic brain disease is wrong, it seems to me, and I should like to register my opinion that the major manifestations we see here displayed are of a psychogenic origin akin to hysteria.

Dr. S. Philip Goodhart: A word as to the last speaker's opinion that the careful avoiding of objects in the patient's way, as she moves about, with apparent loss of control of coördination in motility, we observe often in patients with deformities of motility in those involving the extra-pyramidal mechanism. Indeed, I have often wondered at the agility of these patients with their violent motor defects in synergic control. There is much of the typically organic in the movements of the girl. The symmetrical involvement of agonist and antagonist groups of the shoulders is a not uncommon form of group

involvement in post-encephalitis. It is probably true that an emotional element in the personality makeup of the girl gives a psychogenic impress to the picture.

Dr. Wechsler (closing the discussion): It seems to me at this date we should go a little further than to diagnose hysteria by exclusion, and not be content with saying that because a patient has not something therefore he has something else. Without going into a discussion of psychoanalysis, I think that it has vouchsafed us excellent insight into mental mechanisms and we ought to prove the psychogenesis of symptoms before we are justified in saying a patient is hysterical. As long as that is not proven, we cannot say that a patient has hysteria, just because the symptom looks like it. We know that seemingly purposive movements can be due to organic disease of the nervous system and that those movements can simulate hysteria. A pattern and seeming purposefulness do not necessarily imply hysteria. Every movement obviously follows a pattern, and it merely depends on the functional level at which the disease occurs to bring out the complexity of the pattern.

The point that Dr. Kraus raised I think can be accepted partly only. First of all there is no doubt that in dystonia there is dystonia, that is, constant change in tone from hyper to hypo. Of course he is right in putting dystonia in the group of dyskinesias, but variations in tone are pathognomonic features. It seems to me that if anything is characteristic of dystonia it is posture. Doctor Brock and I described a myostatic form of dystonia wherein the patients who previously had typical dyskinetic movements lost them and were left in a sort of "frozen" postural state against which the previous movements had been silhouetted, as it were. In every case one can see definite postures between movements, and it is those postures which seemed to us to characterize dystonia. In fact, we have seen patients go from the postural form of dystonia with few movements to a phase of violent dystonia, and vice versa. The term dyskinesia is a generic one, and while dystonia belongs in that group, just as athetosis or chorea do, the essential features of dystonia are disturbances in tone and posture.

VISCERAL DISORDERS ASSOCIATED WITH DYSTONIA - MUSCULORUM IN EPIDEMIC ENCEPHALITIS

S. PHILIP GOODHART, M.D.

[*Author's Abstract*]

This brief communication is for the purpose of directing attention to certain features of the clinical syndrome dystonia musculorum deformans, especially and perhaps only present when the syndrome is a part of the pathological process of epidemic encephalitis. The details of observation, analysis and conclusions will appear shortly, by Drs. Ralph Kaufman, Nathan Savitsky, and J. Robert Fried,

resident internes and radiologist respectively in the Neurological Service of the Montefiore Hospital.

During the past decade, we have had under observation at the Montefiore Hospital a large number of cases showing the syndrome of dystonia musculorum, both of encephalitic pathology and others of unknown origin. In the cases following the years since encephalitis of the epidemic type, not only familiar disturbances of the somatic musculature were observed, but visceral symptoms, suggesting involvement of the vegetative nervous system accompanied the hyperkinesia and postural deformities in a strikingly large number of the patients. Just as formerly much of the picture of motor distortion was erroneously conceived of as psychogenic, so for a long time were the disturbances of visceral control considered functional. It is to the credit of Doctors Kaufman, Savitsky and Fried that their timely observations and studies appear to confirm the view that the frequent and often very severe participation of the vegetative nervous system in these cases is part of the central organic process involving that area of the brain so commonly the seat of the pathological process in encephalitis.

The most striking symptoms were those involving the gastrointestinal tract, although the symptoms of disturbance of bladder control were not uncommon. The gastrointestinal symptoms, consisting of intractable and absolutely uncontrollable vomiting, could not be explained on any organic basis after very careful examinations in all directions. In two of the cases the paroxysmal attacks of vomiting led to extreme emaciation. One of the patients was given repeated hypodermoclysis and intravenous feeding to sustain life. In the cases of all the patients these paroxysms would cease spontaneously.

In another instance, R. C., the patient originally shown as probably of psychogenic origin, and later developing a characteristic dystonic syndrome, was, we have reason to believe, an organic case from the beginning of her motor defects. The pertinent feature is that the visceral symptoms which she presented just previous to the development of a typical dystonic syndrome were sudden and extreme abdominal distention, obstinate constipation, and vomiting of such intensity as to lead to the diagnosis of an acute abdominal inflammation requiring surgical intervention. The patient was taken to the Jewish Hospital in Brooklyn; the visceral symptoms spontaneously subsided and the dystonia rapidly developed. There was a history of previous encephalitis. The patient has suffered since very intense seizures of protracted vomiting and of vesical retention.

Fluoroscopic studies of the muscular movements of the stomach showed a definite abnormal hypermotility of the stomach and esophagus in a number of the cases of dystonia, with encephalitis as the etiological factor; observations with barium were conducted. The typical picture was that of a series of antiperistaltic waves which involved the entire esophagus; there was regurgitation of the barium and only later did some enter the stomach. The marked contractions

of the stomach wall throughout the examination caused a reflux of the barium into the esophagus; the obstruction to the flow of barium appeared to be due to muscle spasm. In the case of another patient, shortly after taking the barium, the stomach walls began to contract with such violence that the barium was shot upward toward the cardia. The observations were made by the resident and attending roentgenologists at Montefiore. Fluoroscopic examination of the bladder in several cases has proved unsatisfactory.

I have long been of the opinion that there is a close relation between the nervous centers of control and their physiological function of striatal and nonstriatal muscle and perhaps too of higher nerve control, both for nutrition as well as motility. Post-mortem studies upon a series of cases of muscular dystrophy by Doctor Globus and myself, published a few years ago, showed characteristic trophic changes in the cardiac non-striated muscle in some of the cases. Perhaps the underlying pathology of the dystrophies lies in a trophic center not remote from those of kinesis in the ganglia of the forebrain.

Discussion: Dr. M. Neustaedter: Recently you remember Doctor Wimmer was here from abroad and spoke of a series of 24 cases of the syndrome of amyotrophic lateral sclerosis, with the etiology of epidemic encephalitis. I do not know of any symptom, or any organic syndrome in neurology that we do not hear of in connection with epidemic encephalitis. To-night we hear of dystonia musculorum. At the time I heard Doctor Wimmer I stated that the encephalitis in these cases, either in amyotrophic lateral sclerosis, and I feel also in dystonia musculorum, was merely an exciting cause that produced the symptom upon an already existing point of minor resistance. If you take up the racial question in these cases you will find on examination that they are mostly eastern European Hebrews. My two cases in the Neurological Hospital, and three cases I have seen, two brothers and a sister in Berlin, and other recorded cases, seem to have some racial stamp, just as in amaurotic familial idiocy. I think it would be worth while to take up the question of epidemic encephalitis and bring it down to certain symptom-complexes, like poliomyelitis, that have a definite basis as the result of an inflammatory condition, and speak of these degenerative disorders, or whatever they are, with encephalitis as an inciting cause. In the girl presented there is a possibility that either the encephalitis or the syphilis or both factors were the exciting causes which brought on these phenomena which appeared rather suddenly with remissions. That is a peculiarity. In the ordinary slow progressive case of dystonia we do not get remissions. We have a continuous progress from symptom to symptom, from limb to limb. I throw this out as a suggestion, because if we continue as we are heading, no student will know what the symptomatology of encephalitis is. He will have to go around with the entire field of neurology in his head.

Dr. Michael Osnato: It is quite clear from Dr. Goodhart's paper that he is talking about a syndrome of epidemic encephalitis, and

not about the extremely rare classical dystonia musculorum deformans, just as he might have discussed the Parkinsonian syndrome in encephalitis. That is the thing which is to be kept in mind. He is pointing out that in this group of dystonic cases occurring in individuals who have had epidemic encephalitis, one may encounter a group of symptoms which are properly referred to the sympathetic nervous system, a thing which we have all seen in other types of epidemic encephalitis cases without this particular dystonic picture. I think the value of Doctor Goodhart's paper lies just in this point that apparently the dyskinesia is not only in the somatic musculature but also in the visceral.

Dr. Charles Rosenheck: The question of functional superimposition on an organic encephalitic basis is of course ruled out in the cases under discussion. The vast majority of cases of encephalitis have a very little gastric disturbance. They have vegetative dysfunction, as evidenced by abnormal weight increase, excessive sweat excretion, polydipsia, and polyuria; but we rarely encounter vegetative disturbances such as Doctor Goodhart has so well described. I do not question the possibility of an organic central basis for them, but it seems to be patients of that type, particularly of certain racial types, are very much disturbed by their rather tragic condition and perhaps this sort of functional reaction is evidenced by their extreme gastric disturbances. I am not questioning the fact of the gastric upset, but is it not possible that it is merely a functional superimposition? At any rate, I want to stress the fact that gastric upsets of such marked severity are quite unusual in cases of epidemic encephalitis.

Dr. Moses Keschner: Dr. Goodhart made it quite clear that this is only a preliminary communication. I have had something to do with this work, and I can corroborate Dr. Goodhart's statement that our observations have been quite peculiar. The whole neurological staff are well aware that vegetative symptoms are common in encephalitis, but these unique symptoms referable to stomach motility, to the bladder, and even to the uterus, are so unusual that one is led to believe that there must be some relationship between them and the disease itself, and when we asked the radiologist to study these cases we definitely asked him whether the picture he saw was or was not comparable with the ordinary cardiospasm one sees so often, and he assured us that this is not the X-ray picture one sees in ordinary cardiospasm. We realize fully that this work requires a lot of study. From the evidence that we have obtained thus far we are not quite ready to go on record that vegetative nervous symptoms are a part of the dystonic syndrome of encephalitis. We will have to wait for some post-mortem evidence. I must emphasize again the peculiar form which these symptoms of the vegetative nervous system have assumed in these cases; they were so unique that even taking into consideration the racial factor and all other factors enumerated by the other speaker, we feel that there is sufficient

justification in the problem to merit the attention of all those interested in it.

Dr. Walter Kraus: Last year Dr. Perkins and I reported a case at the American Neurological Association meeting, which we believe added evidence to warrant the thesis that the visceral nervous system exerts a trophic control upon all parts of the body. As far as I know the only important structure of the body in which this has not been proven is the brain itself. Doctor Goodhart's presentation appears to me to furnish even more proof of this thesis. I believe that muscular dystrophy is a trophic disorder of somatic muscle. It is interesting that many of those who first described cases of muscular dystrophy believed this to be the fact. That concept died out, and later the idea that muscular dystrophy is a purely muscular disease came into vogue. The visceral nervous system, as Doctor Goodhart showed some years ago, has trophic control over visceral muscle. He demonstrated a lesion of the heart muscle in muscular dystrophy. Doctor Goodhart to-night has shown that the visceral nervous system produces a very definite pathokinetic effect upon viscera dependent upon a pathological state of the brain, which in this case happens to be epidemic encephalitis. In other words, there is both a trophic and a kinetic control of both types of muscle, somatic and visceral.

What is the puzzling feature to me, which takes us somewhat from our subject, is whether there is a trophic as well as a kinetic control of the cells of glands. Of this I know nothing. It is an idea put before you to think of. You may observe such influences in clinical cases. We know that in epidemic encephalitis the midbrain is very profoundly affected. The kinetic control of glands is very profoundly affected. We know of sweating, seborrhea, and hyperacidity. Whether there is a normal as well as an abnormal trophic control parallel to the normal and abnormal kinetic control of glands is a subject worth considering.

Dr. Goodhart (closing the discussion): Doctor Neustaedter's remarks to the effect that the dystonias are by no means dependent on encephalitis alone as an etiological factor are of course true; we do not contend they are; in fact, as Doctor Tilney and others have so wisely maintained, it seems unjustifiable to assume that because we cannot find a recognizable etiological or provocative factor in pathology, we must conclude that an inherent tissue defect, an abiotrophy, is the answer. I am not won over to the view that the dystonias, like other syndromes of central nerve pathology, perhaps, may result from influences of toxic or otherwise destructive nature, and are not necessarily determined only by a faulty vital tissue capacity. That aspect of Doctor Neustaedter's criticism, however, is a bit foreign to our presentation. The point made by Doctors Kaufman, Savitsky, and Fried is that only in the dystonias of epidemic encephalitic etiology do we apparently observe marked involvement of the vegetative nervous system. Dr. Osnato has very properly

emphasized the point of our communication, namely its purpose to bring out the association between dystonia of the type described and the vegetative nervous system.

Doctor Rosenheck's suggestion that these symptoms on the part of the vegetative nervous system may be psychogenic is of course the very bone of our contention, that the present investigation endeavors to settle. The observations of the young men, upon which this preliminary communication is based, to my mind definitely establish an organic basis for these symptoms.

Memorial notices of the lives of Drs. Vincent Giliberti and Thomas Salmon were read by Drs. M. Osnato and L. Casamajor, respectively. Obituaries will follow in this JOURNAL.

THE MISSOURI-KANSAS NEUROPSYCHIATRIC SOCIETY

APRIL 13, 1927

The fourth regular meeting was held April 13, 1927, at the St. Joseph State Hospital, St. Joseph, Missouri, Karl A. Menninger, M.D., president, in the chair. Fifty members and guests were in attendance. A dinner was served to the members by Dr. J. H. Parker.

POST-ENCEPHALITIC RESPIRATORY SYNDROME

Dr. T. H. Romeiser, St. Joseph, presented a man of twenty years of age who had an attack of "influenza" followed within a few months by the present picture. His "spells" consist of the sudden assumption of a tense, stooped, standing position in which he grasps his knees and then gradually arches his back and neck, turns his head to the extreme right and gasps for air. He relaxes momentarily and then repeats this procedure several times. During these attacks he pays no attention to outside stimuli but in the intervals he talks intelligently and has no distress.

Major Edgar King (Ft. Leavenworth) called attention to the frequency of post-encephalitic respiratory disorders.

Dr. E. T. Gibson (Kansas City) suggested that the present case might be entirely due to a corpus striatum picture.

Dr. Karl A. Menninger (Topeka) briefly discussed various attempts at treatment of this type of disorder, stating that drug treatment was unavailing, but psychotherapy, and particularly psychoanalysis, might be of help in some cases.

POST-ENCEPHALITIC PARKINSONIAN SYNDROME

Dr. Daniels (St. Joseph) presented a man of thirty-five with a typical Parkinsonian syndrome following a definite attack of encephalitis lethargica.

Dr. M. L. Perry (Topeka) said that post-encephalitic personality defects were rather common and particularly so in young people, most of them unquestionably psychoses. He called attention to the infrequency of somnolence in these cases and stated that nearly all cases show some psychic change, some of which are suggestive of hysteria. He advised the use of hyoscin, .02 grain, increasing the dosage until relief is obtained.

Dr. B. Landis Elliott (Kansas City) cited a case of influenza followed by somnolence with subsequent psychomotor retardation and hysteroid symptoms which finally presented definite Parkinsonism. He cited a second case following influenza without psychic symptoms but with somnolence and numerous neurological signs. He suggested the use of tincture of belladonna in these cases and called attention to

the fact that post-encephalitic syndromes frequently appear following illnesses which have been very definitely diagnosed as influenza.

Dr. E. T. Gibson called attention to the fact that postmortem examinations have shown many of these cases to be chronic encephalitis.

Dr. Karl A. Menninger cited two cases of encephalitis in children under five, including a case of a four-year-old who had developed encephalitis following measles, with many of the mannerisms characteristic of the epidemic encephalitis cases, but greatly improved under treatment.

A CASE FOR DIAGNOSIS

Dr. J. H. Parker of St. Joseph presented a woman of fifty-five with a recurrent spastic hemiparesis. The case presented a questionable pallor of the optic disc and some visual disturbances. There was also a left hemianesthesia. At one time the patient had presented a nystagmus. The deep reflexes were more active on the left (spastic).

Dr. E. T. Gibson suggested the possibility of multiple sclerosis.

Dr. M. L. Bills (Kansas City), purely on the basis of her age, thought that multiple sclerosis seemed unlikely.

Major Edgar King questioned the diagnosis of multiple sclerosis because of the relatively rapid loss of vision. He suggested the possibility of a neurosyphilis in which the serology is entirely negative.

Dr. M. L. Perry and Dr. Karl A. Menninger regarded the case as very probably one of multiple sclerosis.

THE MILITARY SIGNIFICANCE OF COMMON MENTAL DISORDERS

Major Edgar King said that the army was filled during and following the Civil War with mental cases. No provision was made at that time for any form of treatment and the numerous reports of medical officers rarely mentioned mental cases. Apparently American physicians paid less attention to mental disorders than to any other form of disorder. Experience gained in the World War forced a definite recognition from the beginning of the war for the commonest cause of disease, namely, some form of mental or nervous disease. More was accomplished as the result of this experience during the war towards the care of these cases than for many years previously.

The present paper deals particularly with the selection of recruits, which is primarily the task of picking out the mentally incompetent individual. It is a problem of rapid work at mobilization and a relatively minor problem during peace time.

A simple method of classification of mental disorders is used in the army, and simple, usable standards to classify men into these groups. The relatively complex tests used in the last war were effective but require a highly organized staff and considerable time. It was essential, therefore, to devise simple tests for practical sorting purposes. The following classification is used at the United States Disciplinary Barracks and is found useful for military purposes:

(1) *Feeble-mindedness*: Intelligence may be tested in approximately 300 different ways, and any method may be used which involves action on the part of the individual to be tested. It was found that during the war individuals with a mental age between eight and nine years could serve in certain capacities with moderate success, depending on their stability. The minimum standard mental age, then, is set at about eight years for mobilization times and ten years for the regular army. It was noted that the meaning of common words gives a rough standard of the general intelligence, and that a vocabulary test roughly agreed with a more detailed test. Consequently a simple written or vocal test has been devised by which a large group can be tested quickly for intelligence defect. Those under the mental age of eight are entirely eliminated and those over this age which show a moderate stability can be accepted.

(2) *Psychoneurosis*: There is no standard by which these individuals can be classified for army service. They should not be accepted in the regular army and preferably not in an emergency.

(3) *Psychoses*: These have no place in the army either in time of peace or war. Their detection is frequently difficult, although usually easy.

(4) *Psychopathic Personalities*: It is an open question as to what should be done with the psychopathic personalities. Undoubtedly some of them can be suitably adjusted, but they must be largely judged by their previous life reactions.

(5) *Individuals with anti-social tendencies*, including the chronic delinquents and incorrigibles: These individuals are not all necessarily psychopathic but are chronically abnormal in their actions. They are frequently encountered by the medical officers after their enlistment and must be judged and disposed of only on the basis of a consideration of the entire situation.

Dr. E. T. Gibson stated that he was much impressed by the concrete outline of the problem presented.

Dr. E. F. DeVilbiss (Kansas City) asked what advice to give to parents who inquired about sending their truant or incorrigible boy to the army for discipline.

Dr. C. A. Potter (St. Joseph) urged the necessity for psychiatric examinations in the great flock of World War veterans who repeatedly presented themselves to various physicians without organic disability findings.

Dr. B. Landis Elliott called attention to the fact that the length of time for a veteran's claim had on two different occasions been extended, so that even after he had been discharged from the army for several years he could place a claim for any form of disability arising within that time. He called attention to the fact that while this might be applicable to some physical disorders, its applicability to mental disorders was scientifically open to question.

Dr. King closed the discussion answering Dr. De Vilbiss' question by stating that the army was not equipped to take care of the incorrigible or the delinquents; that these cases invariably reached a maladjustment in the army just as they did in civil life.

CURRENT LITERATURE

HEREDITY: HISTORY, GENERAL NEUROLOGICAL PROBLEMS, ETC.

Tello, J. F. NEURON DIFFERENTIATIONS IN EMBRYO CHICKS DURING THE FIRST DAYS OF INCUBATION. [Trav. lab. rech. biol., Vol. 21, 1. Med. Sc.]

This paper is 93 pages long and well illustrated by means of 64 text figures. The following points are of general importance. The first neurons which become differentiated in the embryo chick are those of the dorsal longitudinal bundle, viz. of Edinger's nucleus, motorius segmenti which extends from the interstitial nucleus of Cajal in the diencephalon to the anterolateral tract of the spinal cord. As observed also by Bok, all motor nuclei form subsequently along this long cell column, starting from the last hours of the second day of incubation. The first motor nuclei to become distinctly formed are those of the oculomotor and trigeminus cranial nerves and the cell groups from which the anterior roots of the spinal cord arise; the motor nuclei of the fourth, sixth, and twelfth cranial nerves appear some hours afterwards, while the visceral nuclei of the seventh, ninth, tenth, and eleventh develop in the same order as the arches which they innervate. The migration of the visceral neurons towards their definite situation begins only towards the fourth day of incubation. The ventral nucleus of the fifth is, however, found from the beginning next to the point of emergence of the nerve. The sensory nuclei of the cranial nerves develop in a descending manner from the end of the second day of incubation and are derived from the neural crest. It is almost impossible to state at present what influence the epibranchial placodes have on the formation of sensory ganglia. The growth of the nerve-centers in a longitudinal direction is the predominating feature of the first days of development; a growth in a transverse direction takes place subsequently when both the motor visceral paths and the commissural fibers become formed. These, however, appear first in the medulla oblongata and then in the spinal cord. The primary diencephalic commissure (ventral supraoptic commissure of Gudden) is formed of "the cephalic fold of the neural tube in the anterior prolongation of the main longitudinal path." It appears to serve as a guide for the optic fibres in their progression from the retina towards the mesencephalon.

C. DA FANO.

Gordon, Alfred. NERVOUS AND MENTAL MANIFESTATIONS FOLLOWING A PROLONGED USE OF VALERIAN. [N. Y. Med. J., Vol. 120, Oct. 15.]

Valerian is one of the most active antispasmodic remedies. Every one of its preparations has similar physiologic reactions although they differ in degree. The reactions consist at first of stimulation of the brain and medulla and this is followed promptly by a period of fatigue and apathy. The changes observed in the reflexes are apparently of central origin but the sympathetic nervous system, especially the vasomotricity is equally influenced. Not only the circulatory but also the respiratory apparatus is influenced by valerian and its derivatives. Physiological as well as experimental investigations show that the chief effect of valerian lies in the antagonism to convulsive or excitant states. It has also been shown experimentally that small doses are an excitant of the motor cortex, large doses produce depression and from all doses there is a diminished resistance to fatigue. The majority of clinical and experimental investigations are concerned exclusively with the immediate effect of the drug but not with remote reactions if the use of the drug is continued. The following case is an example of the effect of a prolonged use showing in addition to the above mentioned cerebrospinal phenomena also cerebellar manifestations.

Mrs. A. H., thirty-five, following a difficult labor commenced to use tincture of valerian for insomnia. At first she was given a half of a drachm, gradually she increased the dose to one ounce several times a day. Her personal and family histories, also various biological tests, have all been proven to be negative. There was no anemia. After a year and a half of the use of the drug the patient presented the following condition: a marked mental hebetude, an inability to carry out orders correctly, acting frequently in a reverse manner. When told to write she does not know how to go about it; when told to extend her arms, she flexes them. Misinterpretation of objects and persons is striking. When left to herself she would walk in the wrong direction even to the point of danger. She has to be fed; she is extremely unclean. There are no delusions but apparently she has hallucinations. Occasionally she becomes delirious and at times stuporous. The gait is ataxic, such as seen in cerebellar lesions. There is a tendency to fall backwards. Asynergia is present. Station with open and closed eyes is impossible. Voluntary movements are possible but they are slow. The knee-jerks are markedly diminished. The test for the toe phenomenon is uncertain although at times there is a mild extension. There is some ataxia in the upper extremities. The tendon reflexes of the upper extremities are difficult to obtain. Adiadochokinesia is distinct in the right hand. General sensibility is diminished. Eye grounds are normal. There was a lateral nystagmus to the right. The speech does not show special disorder, except that it is very slow. The absorbing interest in this case lies in the cerebellar manifestations which are ordinarily encountered in tumors, vascular

lesions or lues of the cerebellum. The entire course of events show a strong toxic state which, as we know, may simulate any gross lesion of the central nervous system. [Author's abstract.]

Basset. *MOLIÈRE AND THE DOCTORS.* [Aesculape, Aug. 1924.]

An incident in the life of Molière which may explain his attitude towards the Faculty of Medicine is here recorded. This was found in a 17th century manuscript brought to light by l'Abbe Abalangel, and published by him in the *Revue des Conférences*. The manuscript was entitled, "*Veni Mecum, ou le Brevaire seculier du sieur Basset,*" a curious biographical notice, relating to Molière.

The translation is as follows: "Whether Molière's strictures against the medical profession were simply humorous, or were due to a real resentment against the faculty has long been a mooted point. Here is the solution of the problem: he lodged with a physician, whose wife had told the wife of Molière a number of times that the rental of their rooms was to be raised. Madame, who thought it was an honor for the physician's wife to have such lodgers, paid no attention to the threats, until one day she found that their apartment was rented to Duparc, the famous comedian, who gossiped about the quarrel of the two women.

"Molière was led into the quarrel, and grew wroth against his physician-landlord and to revenge himself wrote in five days his comedy '*l'Amour Medicin,*' in 1665, which was given before the King and then in Paris. From this time on he did not cease his attacks on the profession. Personally, he had little use for physicians, and it is related that he never was bled."

Whether the account of the sieur Basset is true or not, his tale gives an interesting side light on the master of humorous sarcasm.

Greil, A. *MENDEL'S LAWS AND THE PHYSICIAN.* [Deut. med. Woch., L., Sept. 26.]

In this paper the author is quite critical concerning the applicability of Mendelian laws to human disease. That so-called scientists should draw conclusions on the organism as a whole from a few superficial characters, which have nothing to do with the whole constitution, is to him surprising. To assume factors and combinations of gens which cause abnormalities of human constitution by simple analogy with the factors of the color, etc., of blossoms, means to delay the important question of their physical-chemical exploration. It is impossible to compare a sick human being so simply with a yellow pea. He believes that mendelism is almost without any significance whatever for practical medicine—even if the closest relatives would breed a large number of children. He agrees with Hertz that almost no consequences remain from Mendel's thesis. The classic pea type is one of the rarest exceptions, and even in these, yellow-greenish seeds were observed, besides the regular splitting. The chromosomes are organelles for the metabolism

of cells. A change of one influences the others. Very few qualities can "mendel." Everything else is conditioned in a complex manner, and cannot be localized in the cell—and the human ontogenetic acquirements belong in this very group. The gravest abnormalities may result from the united absolutely healthy ovum and spermatozoön by the change of conditions after fertilization as Stockard has abundantly shown in his experiments.

Cramer, N. INNERVATION AS FACTOR IN EXPERIMENTAL PRODUCTION OF CANCER. [Brit. Jl. Exper. Pathology, April, 1925.]

This interesting paper among many other things tends to demonstrate that the presence of a peripheral nervous mechanism is an essential factor in the process of chronic irritation which may lead to the development of cancer, thus emphasizing anew the inadequacy of humoral hypotheses in the understanding of human pathology. Virchow's cellular pathology is inadequate. It stops at descriptive levels.

Freund, H. VIRCHOW AND HUMORAL PATHOLOGY. [Deut. med. Woch., LI, April 3.]

This author would seek to support some of Virchow's ideas which of late have been subjected to much reconstruction. Disturbances of diffusion of substances between the blood and tissues as the basis for pathogenesis may still remain true. The purely humoral pathology is dead and an interrelational pathology in which the factors of nervous control are essential has come to take its place. Man is an integrated, not a disconnected mosaic.

West, O. J. IS PATHOLOGIC NOMENCLATURE EITHER SCIENTIFIC OR SENSIBLE? [Jl. Lab. & Clin. Med., X, Feb.]

The author decries the tendency to name tumors after some visual characteristic, or the organ from which the tumor arises, claiming that this disguises the character and clinical significance of the growth, as well as leading to inaccuracy and confusion. He illustrates by stating that in recent, presumably authoritative, works on pathology and tumor diagnosis, he finds not less than twelve malignant growths described under names which in no way indicate their malignancy, or whether of epithelial or connective tissue origin—misnomers such as cylindroma and psammoma—a tumor of cylinders and a tumor of sand. The author then propounds the query whether or not the cylinders and sand are of such importance that they should command the terminology to exclusion of the malignancy resident within these growths.

That the perniciousness does not end with this, he illustrates by quoting from recent text books, wherein a cylindroma is described variously as an endothelioma, an adenocarcinoma, or a carcinoma, while psammoma is stated as sometimes a benign fibroma, at others a malignant sarcoma, and other times a semi-malignant endothelioma. The writer

wishes to know if this is either scientific or sensible, and maintains that naming tumors from visual characteristics such as these or from the organ of origin—such as designating a lymphosarcoma as a thymoma and liver cancer as a hepatoma—instead of clarifying, only roil the pathological waters. He then enters a plea for a uniform nomenclature based on fundamentals, because only in this way will it be exact, offering the suggestion that there are in the human body, practically, but two types of tissues,—epithelium (variously modified) and the framework tissues, and, that malignancy of the one is always carcinoma and malignancy of the other always sarcoma: that further elucidation of the growth can be attained by qualifying adjectives such as “psammomatous endothelioma,” if it seems desirable. He contends that while the pathologist may be versed in the various refinements of the present nomenclature, the field worker, the practicing surgeon or physician, could not hope to keep pace with the rapid, and often useless, changes and the result is a confusion or loss of interest in pathological reading. Yet, when all is said and done, those members of our profession who are in active practice are the terminus of all our pathological labor, and our efforts should be directed to their enlightenment, rather than confined to terms and descriptions intelligible only to those trained in pathological work. Finally, the author places many of the so-called “precancerous” conditions in the list of faulty nomenclature, holding that while invasion and metastases are the evidences of malignancy, it does not follow that these *inaugurate* the malignant changes. Rather, as in cases of acinar carcinoma of the breast, he feels that with the dense packing of gland lumen, by actively proliferating cells, the cancerous process already is initiated, instead of being “precancerous,” as it is now somewhat the custom to designate such condition. [Author’s abstract.]

Mills, George W. T. A REPORT ON SOME HEREDITY STATUS. [Am. Jl. Psych., III, July.]

In this article the author reviews certain of literature on heredity in mental disease, particularly the several articles of Rosanoff, who tends strongly toward the assumption that Mendelian Laws apply. Rosanoff treats epilepsy, dementia praecox, manic-depressive insanity, imbecility, involution melancholia, paranoic conditions and acute alcoholic hallucinosis as showing distinct hereditary relationship and possessing in common the property of behaving as recessive traits. A scale of dominance is postulated beginning with normal and ending with epilepsy. Mills presents the family histories of eighteen well worked up cases consecutively admitted to the Central Islip State Hospital; the only selective criterion being a positive statement in the commitment paper as to heredity and accessibility of relatives. Each of the histories is illustrated with a chart. Only two cases were found to fit at all with Mendelian Laws and the conclusion is drawn—“I am quite convinced

that the statements quoted in the beginning of the paper re psychoses, etc., behaving as recessive traits, are not founded on facts so far established." Myerson's "Psychiatric Family Studies" are also touched on. His statements as to manic depressive in the parents being often followed by dementia precox in the direct descendants but the reverse occurring seldom if at all; and that in brothers and sisters, the vast majority of those afflicted with mental trouble have the same type of disease, are not borne out by Mills' cases. Although he admits that his material is small he thinks that Myerson's findings can only be stated as generalities and that "In mental disease there are too many other factors involved to lay down rules or laws." [Author's abstract.]

Apert, E. LAWS OF HEREDITY. [Bull. Soc. Méd. Hôp., II, 1925. J. A. M. A.]

Apert affirms that study of thousands of family trees, published by the Eugenics Laboratory at London, has failed to confirm, in most cases, Benard's laws of the first-born and of alternance in hereditary affections. Even in cases with a mendelian dominant factor, as for instance in Huntington's chorea, in hereditary lack of phalanges, or in night-blindness, the evidence of these laws was not manifest. He cites Lewis and Embleton's investigation on eighty persons in five generations with a number presenting claw hands. The law of the first-born failed in two out of nine families, while the law of alternance was manifest only in two out of nine. No conformity to these laws was evident in the hereditary hemeralopia in ten generations of the Nougaret family, embracing 2,121 persons. The 135 subjects affected, in accordance with mendelian laws, had 50 per cent affected, of their ninety children. The occurrence of the hereditary affection was manifestly not governed by Benard's laws of the first-born and alternance in births.

I. VEGETATIVE NEUROLOGY.

1. VEGETATIVE NERVOUS SYSTEM.

Barkman, A. A CASE OF DYSTROPHIA MYOTONICA SHOWING WEST-PHAL'S PARADOXICAL FOOT CONTRACTION AND A SIMILAR PHENOMENON IN THE FINGERS. [Deut. Zeit. f. N., Vol. 78, p. 193.]

In a typical case of dystrophia myotonica it was found that if the foot was passively dorsiflexed it retained this position when the observer's hand symptoms and the characteristic slowness of voluntary movements in this disease are due.

Allaben, G. TWO CASES OF AMYOTONIA CONGENITA OCCURRING IN THE SAME FAMILY. [J. A. M. A., Vol. 83, Sept. 13.]

The two cases reported are of interest owing to the fact that heredity, or a familial tendency, has not been noted in the cases heretofore reported.

These cases, and possibly a third, all occurred in male children in the same family, whereas, two female children in the family showed no signs of the disease.

Eddy, N. B. THE ACTION OF PREPARATIONS OF THE ENDOCRINE GLANDS UPON THE WORK DONE BY SKELETAL MUSCLE. [Amer. J. Physiol., Vol. 69, 432-40. Med. Sc.]

This investigation was undertaken with a view to determining the extent to which the working power of muscle is affected by perfusion with solutions of various gland extracts. The method of procedure consisted in recording the exhaustion curve of each gastrocnemius muscle of a frog, uniformly loaded and uniformly stimulated—the one during perfusion of the muscle with Ringer's solution, the other during perfusion with Ringer's solution plus a gland extract. The gland substances employed were the dried powders prepared by Armour and Company. These were found to produce varying effects. Ovarian, orchitic and posterior pituitary substances did not affect materially the work done. Parathyroid, corpus luteum, anterior pituitary, insulin and thyroxin all tended to decrease the work done; whilst pineal, suprarenal, thymus, and mammary substances and secretion were found to increase the work done. The effect upon the work done of suprarenal substance and adrenalin was identical in kind, as was also that of thyroid substance and thyroxin and of pancreatic substance and insulin. The work done during perfusion with all of the agents studied varied independently of the perfusion rate.

Tietz, L. GRAVE PSEUDOPARALYTIC MYASTHENIA. [Klin. Woch., Vol. 3, Oct. 7.]

Tietz describes a case of myasthenia gravis pseudoparalytica. Epinephrin relieved the condition. The patient died from erysipelas. Necropsy revealed an abnormal structure of the cortex of the suprarenals and an adenoma in the medulla of one of them.

Cuno, F. JUVENILE MUSCLE ATROPHY AND AVITAMINOSIS. [Deutsche med. Woch. Vol. 50, Aug. 29.]

Treatment by yeast, cod liver oil and foods rich in vitamin substances brought about distinct improvement in two boys suffering from pseudo-hypertrophic dystrophy.

Looney, Joseph. THE RELATION BETWEEN INCREASED MUSCLE TENSION AND CREATINE. [American Journal of Physiology, Vol. LXIX, Aug.]

This is a continuation of the studies abstracted in a preceding article, and gives the analyses of the blood taken from ten catatonic cases showing marked muscular tension. The results show that there is a decrease in the uric acid nitrogen from 3.67 per cent to 2.74 per cent and a lowering of the blood sugar from 89.8 mgm. to 81.0 mgm. The most striking change is that of the figures for creatine. There is an increase in abso-

lute amount in mgm. per 100 c.c. of blood from 6.98 for the controls to 11.2 for the catatonic group. The change in per cent of total nitrogen corresponds to this, the figures being 8.42 per cent for the controls to 12.9 per cent for the patients. These figures, with those given above, would appear to be conclusive evidence that the amount of creatine in the blood varies with the changes in muscular tension of the individual. [Author's abstract.]

Golant-Ratner, R., and Ratner, J. NEUROMUSCULAR APPARATUS AND VEGETATIVE INNERVATION. [Klin. Woch., Vol. 3, Sept. 9. J. A. M. A.]

Golant-Ratner and J. Ratner recommend their method of comparing the threshold stimulus for tetanus and for simple contraction of a muscle. They use it to reveal local changes of sympatheticotonus, and consider it a finer index of the epinephrin reaction than changes of blood pressure.

Wolff, A. MYASTHENIA GRAVIS AND OVARIAN DEFICIENCY. [Monat. f. Geb. u. Gyn., Vol. 70, Aug.]

This clinical record deals with a case of myasthenia gravis pseudo-paralytica in a woman, aged twenty-seven, which had developed shortly following birth of her first child. There had been an aggravation of the symptoms in the premenstrual period, and during the first two days of the menses the patient was always better. He attributed the disturbance to a deficient ovarian hormone and treatment with ovarian extract had surprising results. No insight into the patient's unconscious attitudes toward the resistances to the female rôle is afforded. Such unconscious resistances often play havoc with ovarian functioning.

Tchougounoff, S., and Sourkoff, A. THE PATHOGENESIS OF THE CLINICAL VARIETIES OF ACHONDROPLASIA. [Revue Neurologique, Vol. 31, T. 2, No. 3, p. 252.]

The author reports a very carefully studied case and discusses the different theories of the etiology of this condition. First, the theory of a congenital dystrophy of the cartilage (Parrot, Maget). Second, the theory of endocrine origin (P. Marie and others) and third, the theory of mechanical origin (the amniotic theory of Jansen). He concludes that the condition is due to two factors a congenital dystrophy plus a glandular deficiency, probably the hypophysis. Clinical varieties are due to variations in these two factors. (Camp, Ann Arbor.)

Léri, A., and Linossier, Mlle. CONGENITAL ACHONDROPLASIA. [Bull. and Mem. Soc. Méd. Hôp. de Paris, Vol. 49, Jan. 1, p. 1780. B. M. J.]

Cases in which the typical features of achondroplasia—namely, dwarfishness, macrocephaly, disproportion in the length of the limbs, trident hand, lordosis, sinking of the bridge of the nose—are only present in a slight degree are designated "hypochondroplasia." They describe the condition in a mother and daughter, and say that these cases can readily be distinguished from cases of rickets by the symmetrical nature of

the deformities and the absence of spinal distortion. The daughter, aged twenty-one, had suffered from violent paroxysmal headaches for five years. Her condition was not immediately diagnosed, for, though she was only 4 ft. 11 in. in height, her trunk and limbs were well proportioned. She had lordosis, with a prominent abdomen, her nose was depressed at the root, and her head was 23 inches in circumference. Her fingers were podgy and clubbed, but did not present the characteristic trident formation. The fourth metacarpal was almost half an inch shorter than the adjoining ones, with consequent apparent shortening of the ring finger. The fourth metatarsal showed a similar deformity, and hallux valgus was also noted. In spite of a negative Wassermann reaction and absence of a family history suggestive of syphilis, antisyphilitic treatment was tried, to which the headaches rapidly yielded. The mother, 4 ft. 10 in. in height, presented the same deformities as her daughter, as did also the mother's father. The husband was of normal stature and a second girl was normal.

Thompson, Howard K. THE ENDOCRINE ELEMENT IN ARTHRITIS. [Boston Medical and Surgical Journal, Vol. 192, No. 14, pp. 658-664.]

The frequent presence of arthritic symptoms in cases of endocrine dysfunction, also the symptoms of endocrine dysfunction in cases of arthritis lead to a study of the correlation of the two conditions. One hundred cases of chronic arthritis were studied; following the classification of infectious, hypertrophic, and atrophic. One hundred and forty-six basal metabolism determinations were made, taking the mean of the DuBois and Harris-Benedict standards. Thirty-eight per cent of the series fell below normal, while 12 per cent were above. Of the cases below normal whose diagnosis was confirmed, 77 per cent were of the hypertrophic group. These latter appear to respond to opotherapy. Cases of chronic infectious arthritis if of sufficiently long duration may merge into either atrophic or hypertrophic forms, although they may remain chronic latent infectious processes for years in which no demonstrable bone change takes place. These infectious cases which are usually undifferentiated are designated as isotrophic. Their basal rates seem to fall within the normal limits. Etiology of the isotrophic group is regarded as definitely bacterial; lines of treatment as surgical removal of foci, immunization or shock therapy, physiotherapy and medication, are fairly established. The frequent failure of these forms of treatment is of note in cases which are established in either the atrophic or hypertrophic groups. Cases of the latter groups may have a demonstrable focal infection, but this is in all probability of later development, or is superimposed on a former infection. Removal of this infection therefore will not eliminate the steadily progressive background of endocrine disturbance coupled with the arthritis. At the point when bone changes are demonstrable in chronic arthritis the endocrine system frequently appears to have undergone an attack, often with resultant symptoms of endocrine

dysfunction. Illustrative cases are cited. Lines of differentiation between groups are often difficult. Borderline and transition cases are met with. Before the final establishment of a hypertrophic case with low basal metabolism, there appears in some cases a period of increased glandular activity. Anatomic typing of patients would seem to be an additional clinical help in the classification of arthritides. [Author's abstract.]

Goering, D. THE INFLUENCE OF THE NERVOUS SYSTEM ON BONES AND JOINTS. [Ztschr. f. d. ges. Neurol. u. Psychiat., 42, 1. Med. Sc.]

According to Cassirer, fatty tissue, bones, and joints are all to be regarded as "passive tissues" which are normally under an active trophic influence of nervous origin. However, the reaction of bone to loss of this influence is somewhat more complex than that of fatty tissue, in that atrophy, hypertrophy, combinations of the two and other pathological anomalies in structure and chemical constitution occur. In addition, questions of mechanical stress from muscular action also enter into consideration. For example, in facial palsy, Pichler has recorded that bony changes in the skeletal structures of the face may result from the absence of muscular action. Moreover, disturbances of afferent innervation have also a profound influence upon the nutrition of bones and joints. Anatomical investigations show that bone receives a cerebrospinal and a sympathetic innervation by means of medullated and non-medullated nerve-fibers. Numerous investigators have studied the effects of nerve-section upon bony nutrition, and have found trophic changes to follow the procedure; loss of size and weight, diminution of inorganic material with increase of organic, and in growing animals defective development. The changes are mainly regressive, hypertrophy having been very exceptionally noted. Very numerous observations have been recorded upon the influence in bone of nerve-lesions and diseases in man. Here again, regressive changes seem the rule, but inflammatory and osteoarthritic lesions are also found. In general, lesions of mixed nerves are more productive of bony changes than those of purely motor nerves, and irritative lesions of sensory nerves seem most potent. The authoress concludes that there are special trophic fibers of sympathetic origin passing to bones and joints, with corresponding spinal centers. A general controlling trophic center is situated in the brain in the region of the floor of the third ventricle. The paper is illustrated by photographs of clinical cases upon which the conclusions reached are based. (F. M. R. Walshe.)

Cecil, Russel, and Archer, B. H. ARTHRITIS OF MENOPAUSE. [J. A. M. A., Vol. 84, Jan. 10.]

Three hundred and fifty cases of arthritis have been surveyed by these observers and divided into a series of clinical groups, each characterized by fairly definite clinical manifestations. These groups are: 1. The frankly infectious type, a polyarthritic form seen usually in young people, and characterized by periarticular changes and by the fact that the symp-

toms slip from joint to joint. 2. The specific arthritides, including tuberculosis, gonococcal and syphilitic arthritis. 3. Monarticular arthritis, usually in the hip, occasionally in the shoulder, often referred to as morbus coxae senilis, a destructive arthritis of the joint of unknown etiology and probably infectious. 4. True arthritis deformans, a progressive and destructive disease of the joints, characterized by ankylosis and deformity. 5. Senile arthritis, a hypertrophic form. 6. Menopause arthritis, a chronic polyarthritis of obese middle-aged women, occurring at or just after the menopause and characterized by persistent stiffness and pain in the joints affected. The present study is concerned with the last type described. Altogether, more than sixty cases of this form of arthritis have been under observation. Of these, fifty typical cases have been selected as a basis for this study. The youngest patient was forty-two; the oldest, sixty-six. There was apparently no racial predisposition. Ninety per cent of cases were in married women. One of the most striking features of this disease is its apparently close connection with the menopause. Eighty-six per cent of the cases occurred after the menopause, 20 per cent immediately after, 14 per cent within one year after, and 26 per cent within two years after. Only 14 per cent of the cases developed before menopause, and in these cases the symptoms of arthritis preceded the change of life by only a short interval. None of the patients gave a history of rheumatic fever. Constipation was noted in twenty-seven cases. The knees have been the joints most frequently involved, but the fingers, shoulders, feet and lumbar spine are often implicated. In many cases there is little or no periarticular inflammation or thickening. The disease affects chiefly the ends of the bones and the synovial membrane. The onset of menopause arthritis is usually insidious. The first symptom, as a rule, is a slight stiffness in the knees, noticed when ascending and descending stairs or on rising from a chair. The pain and stiffness gradually become more marked, and soon the patient experiences discomfort when walking or bending the knees. The pain and stiffness vary in intensity with different patients; sometimes it is slight and at other times severe; but these patients seldom resort to crutches and never become bedridden. The physical appearance of these patients is quite characteristic. They are almost always overweight, sometimes to a marked degree. As a rule, they have the appearance of robust good health. In a typical case, the lungs and heart are normal. Cardiac murmurs are extremely rare, a fact which would indicate that this form of arthritis has nothing in common with rheumatic fever. The abdomen is prominent; the abdominal wall greatly thickened. There is also an excess of fat around the hips and breasts. The posture when standing is quite characteristic. The shoulders droop, and there is a curvature of the dorsal spine and lordosis in the lumbar region. The abdomen is thrown forward, and the feet are abducted, producing a distinct tendency toward knock-knee. Flat foot is an extremely common complication, being present to some extent in nearly every case. Surprisingly few objective signs are noted in the joints.

Actual limitation of movements is extremely rare. Passive movements cause only moderate pain. This may be explained by the fact that there is little or no periarticular inflammation in these cases. One of the most interesting signs in this condition is the presence of Heberden's nodes, which occur in a high percentage of cases; in 74 per cent of this series. These nodes appear on the distal phalangeal joints, and may occur on any or all of the fingers. Foci of infection have occasionally been noted on this series of cases, but nothing in the history of the patient or in the character of the disease would indicate that this type of arthritis is infectious in origin. The prognosis in menopause arthritis is fairly good. The progress of the disease is very slow; in some cases the process becomes apparently stationary. There is little, if any, tendency toward progressive involvement of other joints, a feature so characteristic of true arthritis deformans and of infectious arthritis. Under a regimen consisting of iodids, low calory diet and physiotherapy, a majority of the patients have been definitely benefited. Daily hot baths, turkish baths, baking and sun baths have all been advocated. Heat is a triple benefit; it increases the blood supply to the part, promotes elimination through the skin, and is itself an excellent anodyne. Massage has been used in a large percentage of the cases. If persisted in, it is usually beneficial. Roentgen-ray therapy was of no avail in ten cases of the series. Some patients felt distinctly worse after the exposure. Iodids, in the form either of the potassium salt or hydriodic acid, have been administered in almost every case. The syrup of hydriodic acid was given in dram doses three times a day, in water, after meals. Potassium iodid was administered in the form of a saturated solution, ten drops in water three times a day, after meals. In some cases we have tried a mild form of foreign protein therapy, that is, subcutaneous injections of typhoid vaccine or heated milk. In a few cases, an autogenous vaccine was prepared from a strain of *B. coli* isolated from the patient's stool. Very little benefit was obtained from this form of therapy. The authors are convinced that the endocrines play an important part in the production of this type of arthritis. Thyroid extract has proved a valuable agent in reducing the patient's weight. Vaccine therapy, use of thyroid, thymus and ovarian extract or whole gland gave no results.

Kylin, E. HIGH BLOOD PRESSURE. [*Klin. Woch.*, Vol. III, Sept. 16.]

Disturbance in the vegetative nervous system is the point to which treatment should be directed in cases of high blood pressure. A rest cure should be tried first, since this often gives good results, though when the patient returns to his former occupation the pathological condition may reappear. For some time the author has treated essential high blood pressure by calcium salts and atropine given by the mouth. Theoretical grounds for this treatment are the supposed predominance of the vagus nervous system over the sympathetic nervous system in essential hypertonus (as indicated by the adrenaline reaction) and the view that the

calcium ions bring about stimulation of the sympathetic system. It has been shown also that in essential hypertonus the calcium of the blood is diminished. By the administration of atropine the author endeavors to restore the equilibrium between the vagus and sympathetic nervous systems. Four cases are recorded in detail illustrating the improvement under the administration of calcium chloride and atropine four times a day. These patients were in hospital, but similar improvement was obtained in out-patients, and the author considers that the treatment is worthy of further trial.

Schorer, G. EDEMA FROM VASCULAR SPASM. [Schw. med. Woch., Vol. 55, April 16. J. A. M. A.]

Schorer observed, in 1923, 125 cases of edema from vascular spasm, which presented a recurring acute circumscribed form or a chronic and diffuse form or variable course. The acute edema was accompanied by itching, and in most cases there was a history of urticaria. Extreme tenderness on pressure and pronounced pain in response to pinching were characteristic phenomena in the patches of chronic edema. Certain cases were associated with attacks of severe abdominal pains or complicated with nephritis. One woman, inclined to vegetative neuroses, developed after an injection of antitoxin severe multiple anaphylactic phenomena, some persisting for years. Besides mental or mechanical causes, a special predisposition, seasons and atmospheric changes seemed to be important factors. The edema appeared more often in the spring, and between 3 and 6 A.M., namely, at the time of the maximum conduction of electricity in the air.

Claude, H., and Tinel, J. ORGANOTHERAPY IN RAYNAUD'S DISEASE. [Bull. Soc. Méd. Hôp., Vol. XLIX, April 3.]

In this report from St. Anne's clinic the thirty-six-year-old patient had a Raynaud's syndrome which followed a four months' period of nervous disturbance resulting from an accident. She suffered from crises of vasodilatation alternating with or coinciding with angiospastic states, the latter predominating and revealing a local surface hyperexcitability of nervous origin. A sympathicotonia exaggerated the angiospastic irritability of the peripheral reflex arc. Administration of pituitary and ovarian extracts favorably affected the induced hypervagotonia. The crises disappeared the second day, after one dose of pituitary extract by mouth. After a daily dose of from 0.6 to 1 gm. for twelve days the treatment was continued with 0.6 gm. of ovary extract till the end of the month. The pituitary extract was used in decreased doses of 0.3 and 0.2 gm. the following eight weeks. She remained well for a year at least.

Dupérié. RAYNAUD'S SYNDROME IN INFANTS. [Paris Médical, Vol. 57, Sept. 20. J. A. M. A.]

Dupérié reports five cases, mostly in girls, in one instance in two sisters. He describes a chronic form and benign, acute, grave and atten-

uated forms. He accepts that an infection or intoxication, as well as a syphilitic endarteritis may produce the syndrome. Also, hyperexcitability of the sympathetic nerve, connected with a disturbance of the endocrine glands, has to be considered. Electrotherapy is useful in treatment of the local gangrene, and specific treatment of syphilis is followed by rapid improvement when syphilis is a factor, as in one of his cases. One of the children lost part of a forefinger, and in another the nose formed a dry gangrenous patch. One child died from spasm of the glottis.

Hering, H. E. CAROTID PRESSURE REFLEXES. [Münch. med. Woch., Vol. 71, Sept. 5.]

In this study the author traced the pathways taken by the carotid pressure reflexes to a branch of the glossopharyngeal. He found that section of the glossopharyngeal causes an increased blood pressure, and abolishes the reflexes. Central stump electrical stimuli lowers the blood pressure more than stimulation of the depressor nerve. This branch of the glossopharyngeal nerve is given a specific name, the *sinus nerve*, as a result of these researches.

Wiesel, J. VESSEL PAINS AND HYPERTENSION IN THE MENOPAUSE. [Med. Klin., Vol. 3, Sept. 14.]

This clinical presentation deals with localized pains in the blood vessels (vasalgia) occurring at the time of the menopause. He separates them from those associated with spasms and which cause intermittent claudication. In the bend of the knee, as well as in the saphenous region, the greatest difficulties occur. It is premature to diagnose an angina pectoris in mere aortalgias of these women, especially if tachycardia be present. Regional paresthesia may accompany them. These climacteric hypertension phenomena occur in attacks and are followed by bradycardia, headache, hot flashes, or dizziness. In some respects the symptoms produced by an epinephrin injection are closely related.

Galup, J. OCULO-CARDIAC REFLEX IN RESPIRATORY DISEASES. [Presse méd., 32, 488-92. Med. Sc.]

Galup reports the result of a careful research into the state of the oculocardiac reflex in respiratory diseases associated with paroxysmal dyspnea. He studied 100 normal subjects, 106 cases of primary asthma, 50 of chronic respiratory disease with paroxysmal dyspnea, and 68 of chronic respiratory disease without dyspnea. Graphic records of the radial pulse were used to determine the change in the heart rate, and a constant degree of pressure on the eye was employed to invoke the reflex. The graphic records were analyzed to determine the change in rate over the whole period of compression, the maximum change in any five seconds period, and the maximum change in the time of a single heart cycle. The great variation in the response in normal subjects is emphasized, both in different individuals and at different times in the same individual, and the author considers that the reflex is of no value for recognizing patho-

logical states of the vegetative nervous system in individuals. By plotting the maximum change in rate in a five seconds period (expressed as a percentage of the initial rate) against the number of subjects (expressed as a percentage of the total examined), curves are obtained that indicate a collective variation from the normal state of the vegetative nervous system in subjects suffering from respiratory affections, and especially those in which paroxysms of dyspnea occur. The author argues that a rise of heart rate following the commencement of the ocular pressure cannot be considered as an indication of raised sympathetic tone.

Danzer, C. S. THE PERIPHERAL VASCULAR MECHANISM. [Annals of Clinical Medicine, Vol. 3, Feb.]

This work is a sequel to that on capillary blood pressure (American Journal of Physiology, LII, Vol. I, 136) published by the same author five years ago. Danzer found in working out the method for the determination of capillary blood pressure that the capillaries displayed evidence of contractility. This was just prior to the well known publication on this subject by Krogh of Copenhagen. It was quite obvious at that time that in addition to the contractility of the capillaries there were other mechanisms in the blood vessels which influenced reactions of the circulation. If the bulbus arteriosus of the frog be ligated, the capillary flow in the tissues will not stop immediately, but will be maintained for a considerable period, lasting usually from five to ten minutes. The heart of the animal enlarges progressively until the organ becomes twice its normal size. In view of the complete isolation of the ventricle from the arterio-capillary system, the continuation of the peripheral circulation must be ascribed to the direct squeeze of the blood vessels on the blood column, from the semilunar valves all the way along the vascular system up to the entrance of the great veins into the heart. The cardiac enlargement following aortic ligation is due to the sweep of the blood mass from the vessels to the heart. The activity of the peripheral vascular mechanism is inhibited by the destruction of the vasomotor nerves in combination with the effect of certain chemicals directly applied to the capillary system. The former was accomplished by pithing the animal or cutting the large nerve trunks, the latter by the application of chloroform over the whole cutaneous surface. If, in an animal so treated, the Harvey experiment of bulbus ligation be performed, the peripheral capillary circulation stops at once and no cardiac enlargement occurs. The reason is obviously the failure of the propulsion of the blood mass from the vessels to the heart. This difference in the vascular reactions between the normal and the injured animal following aortic ligation is so pronounced that Danzer has suggested its use as a functional test of the blood vessels. For example, an animal subjected to an experimental infection or chemical poisoning that fails to respond with cardiac enlargement and a sustained peripheral capillary circulation after this procedure may be assumed to be suffering from a very severe vascular injury. A mild injury, one corre-

sponding experimentally to either vasomotor sectioning or capillary dilation by chloroform will be incapable of inhibiting this reaction. The arterio-capillary peristaltic wave which is responsible for this phenomenon has been subjected to further study. Single arteries were tied off and the capillary circulation in the terminal branches were observed. Here again a sustained capillary circulation up to five minutes occurred. Even in the amputated frog's foot the peripheral circulation was still active after the large vessels were ligated. The writer has made an inroad into the clinical problems of circulatory disorders by applying this test to man. He compressed the brachial artery by inflating a blood pressure cuff around the arm to suprasystolic pressure and timing the duration of the corpuscular flow in the capillaries of the finger. Normally there is a steady stream from the capillaries to the veins lasting from fifteen to thirty seconds. Under pathological conditions this reaction is strikingly modified. These, however, are not discussed in the present paper, but will be the subject of a later communication when the subject will have been more fully investigated. [Author's abstract.]

Smith, A. L. ONE HUNDRED CASES OF CARDIAC IRREGULARITIES DUE TO EXTRASYSTOLES. [Neb. State Med. Jl., Vol. X, March.]

This is a clinical résumé of the study of 100 cases of extrasystole. In fifty-six the normal rhythm was established; forty remained as they were; four died. In twenty-seven of the cases here reported the extrasystole was due to tea, coffee, cocoa, tobacco, aspirin, strychnin or digitalis, and ceased when these substances were no longer used. Of thirty-one cases with infections and toxemias outside the heart, twelve were restored to normal rhythm by removal of the infections; the other nineteen continued to have extrasystoles at varying intervals. One patient with hyperthyroidism was placed on quinin and ergot, and after the return of the basal metabolism to normal the arrhythmia disappeared. Influenza caused extrasystoles in two of three patients; in four highly neurotic patients no change in the rhythm followed treatment, and in the one due to mental overwork rhythm has been restored. In fourteen cases in which no cause could be assigned, six became normal after potassium iodid and sodium bromid, while eight remained as before.

Lapicque and Veil. THE VAGUS IN CHRONAXIA IN THE HEART. C. R. Soc. Biol., Vol. 92, Dec. 5.]

These were experiments upon frogs and indicated that stimulation of the left vagus caused a more pronounced reduction in auriculo-ventricular chronaxia than stimulation of the right nerve. The different distribution of the two nerves in the heart affords the explanation, according to these observers.

Petzetakis, M. OCULOCARDIAC REFLEX AND HEART BLOCK. [Arch. des Mal. du Coeur, March, 1925.]

In this study the author points out that with hyperexcitability of the vagus, no matter what the exciting factor or factors may be, compression

of the eyeball can induce disturbances of auriculoventricular conduction independent of any lesion of the conducting system of the heart.

Wiedhopf, O. PERIARTERIAL NERVES. [Münch. med. Woch., Vol. 72, March 13.]

A critical study of the whole subject of periarterial innervation which led to the conclusion that there are no long sensory nerves in the sheath of blood vessels. The explanation of the results of periarterial sympathectomy by a reflex is at present the most plausible but is far from being satisfactory.

Willius, Fredrick A. PAROXYSMAL TACHYCARDIA WITH MULTIPLE FOCI OF STIMULUS PRODUCTION. [Annals Clinical Med., Vol. 3, Feb.]

Willius reports an interesting case of paroxysmal tachycardia occurring in a man forty-nine years of age, who complained of attacks of rapid heart action occurring suddenly and terminating suddenly, which had been present twenty-one months. A few months prior to his visit to the clinic the attacks had begun to be much more frequent, occurring as often as seven or eight times a day, and lasting a few minutes to several hours. During the attacks there was an associated feeling of pressure in the upper abdomen, a sense of constriction in the throat, dizziness, and occasionally, during the severe attacks, momentary loss of consciousness. Examination of the heart between the attacks showed that the area of cardiac dullness extended 4 cm. to the right and 10.5 cm. to the left of the midsternal line. Occasional premature contractions were present and no murmurs were noted. The attacks lasted for four days after hospitalization but did not recur during the subsequent period of observation, which lasted twenty-two days. An analysis of the electrocardiograms in this case reveals a very unusual combination of cardiac mechanisms, and a search of the literature fails to reveal a comparable case. The electrocardiograms taken on the day of the patient's admission to the hospital disclose typical examples of ventricular tachycardia. In lead I ventricular complexes occurred at a rate of 254 a minute, and according to their character apparently had their origin in the left ventricle, and a variation in the general contour of the deflections seemed to indicate that they arose from at least two foci in the left ventricle. An electrocardiogram taken later the same day, during another paroxysm of tachycardia, showed auricular flutter, the auricular rate being 390 a minute. Subsequent electrocardiograms showed an increasing degree of block, with auricular flutter present, and eventually the inception of sinus rhythm, the auricles and ventricles beating at the rate of 109 a minute. Another interesting transition was apparent eight seconds later, when A-V rhythm occurred, with a further slowing of the rate to 90 a minute. The patient received 0.8 gram daily of quinidin sulphate, which proved a sufficient dosage to prevent the attacks of paroxysmal tachycardia. The case reported is of extreme interest and of unusual type in that there were multiple foci of

cardiac stimulus formation, which evoked sudden and abrupt transitions in cardiac mechanism. [Author's abstract.]

Vollmer, H. BLOOD CHEMISTRY UNDER STIMULATION OF THE VAGUS. [Klin. Woch., Vol. 3, Dec. 9.]

In this careful experimental and clinical study the author determined the concentration of proteins, calcium, and potassium ions in the blood after ingestion of cholin and injection of pilocarpin, both vagotonic drugs. The changes of the inorganic ions he explained on the basis of the thickening of the serum. Premature generalization of the ion theory of action of the vegetative nerves, so widely written upon by Zondek, are to be guarded against.

Piney, A. THE NUCLEATED RED CELLS FOUND IN THE CIRCULATION IN PERNICIOUS ANEMIA. [J. Path. & Bacteriol., 27, 249. Med. Sc.]

An attempt to decide whether the megaloblast is to be regarded as a special type of cell. Red blood cells with finely reticular nuclei were found only in pernicious anemia and acholuric jaundice. Stages from basophile cells to eosinophile non-nucleated disks could be made out, and the latter differed from ordinary red corpuscles only in their greater size. In severe degrees of anemia, whether simple or pernicious, other large nucleated red cells were seen: these had a "cart wheel" nucleus and a basophile or polychromatic cytoplasm: no eosinophile stages of these cells were found, and the name of macro-normoblast is suggested for them. Ordinary small nucleated red cells with "cart wheel" nuclei were also found (normoblasts). The contention is that there are three types of nucleated red cell, viz., megaloblasts with reticular nuclei, which are peculiar to pernicious anemia and acholuric jaundice; macro-normoblasts, which are immature normoblasts and do not, in their large state, become hemoglobinized; and normoblasts which become hemoglobiferous and lose their nuclei, giving rise to the ordinary corpuscle. The megaloblast gives rise to a large hemoglobiferous corpuscle (megalocyte), while the macro-normoblast gives rise to a polychromatic large non-nucleated disk, under pathological conditions (macro-normocyte). Megaloblasts differ from the other two forms, also, in that they may appear in the circulation even in the absence of the usual stimulus, viz., defective supply of oxygen.

Jordon, H. E., and Speidel, C. C. STUDIES ON LYMPHOCYTES. III. GRANULOCYTOPOIESIS IN THE SALAMANDER, WITH SPECIAL REFERENCE TO THE MONOPHYLETIC THEORY OF BLOOD-CELL ORIGIN. [American Journal of Anatomy, Vol. 33, pp. 45-67.]

The salamander provides exceptionally favorable material for a more rigid test of the monophyletic theory of hemopoiesis. Here granulocytogenesis is restricted to a perihepatic capsular layer of lymphoid tissue. The spleen functions in blood formation only as an organ of erythrocyte and thrombocyte origin. The open character of the extensive blood system

of the spleen secures direct contact between lymphoid hemoblasts and blood plasma. The relatively meager blood supply of the periphery of the liver restricts such contact to a minimum. Under the former conditions only red cells and spindle cells develop; under the latter only neutrophilic and eosinophilic granulocytes. The degree of ease with which transudation products from the plasma may reach the lymphoid hemoblasts would seem to be the proximate extrinsic factor underlying the differential development of apparently identical lymphocytes. The amount of cytoplasm relative to the nucleus is apparently the factor which determines whether a thrombocyte or an erythrocyte shall develop from a certain lymphocyte in the spleen. Thrombocytes develop from lymphocytes with a minimum of cytoplasm. The proximate cytogenic factor underlying bispecific granulocyte differentiation is presumably one of relative concentration, in certain locations where lymphoid hemoblasts occur, of two types of extrinsic stimuli; one type of stimulus (that for neutrophils) being greatly increased by the products of tissue lysis following certain bacterial infections, the other type of stimulus being markedly increased by the tissue lysis associated with parasitic worm infections. The stimulus for granulocytic differentiation is also in part the cytolysis involved in normal organic growth and development. The evidence from salamander supplies additional data in support of the claim that the lymphocyte is a relatively undifferentiated, developmentally pluripotential cell, capable of a variable histogenesis dependent upon a variable environment, and that among these various capacities are those of differentiation into thrombocytes, erythrocytes, monocytes, and granulocytes. [Authors' abstract.]

2. ENDOCRINOPATHIES.

Kraus, E. J. ADIPOSEGENITAL DYSTROPHIA. [Med. Klinik, Vol. 220, Sept. 21.]

Clinical study of six cases of adiposogenital dystrophy. The author advocates the conception that the anterior pituitary stalk-midbrain system is involved. The absence of obesity in acromegaly, in his opinion, may be due to eosinophilic adenoma of the pituitary.

Langmead, F. S., and Calvert, E. G. B. OBESITY CARBOHYDRATE METABOLISM AND DUCTLESS GLANDS. [Lancet, 1924, Med. Sc.]

The authors point out that clinically many obese children are diagnosed of cases of dyspituitarism on insufficient grounds. After the onset of puberty these children appear perfectly normal. They investigated eight children, four of whom were boys and four girls. Two of the boys showed rudimentary sexual development. Two of the girls, aged 10 and 13 years respectively, were sexually precocious. In the girl aged 10 years the precocious overgrowth followed on encephalitis lethargica. It was only when obesity was accompanied by disordered physical or mental

growth that it could be considered pathological. Obesity, such as that under consideration, may be due to a pituitary tumor, which if large enough provokes particular signs of pressure. In none of the eight cases investigated was this so. Investigation of the pituitary fossa by X-rays was of help in two. Varying amounts of sugar up to 300 gm. were given by the mouth, and in only one case was glycosuria provoked. The authors consider this pathological. The blood-sugar of these patients after varying amounts of glucose showed a variety of curves. Nothing characteristic was noted, but all were abnormal. In order to study the modification of the blood-sugar curves by the administration of endocrine glands, four cases were selected. These were three boys aged 10, 11½, and 14 years respectively, and one girl aged 13 years. In the two younger boys the obesity was accompanied by genital hypoplasia, but there was no mental backwardness: the two older children were examples of obesity with overgrowth but with normal sexual development. It was found that in the two younger boys the giving of 2 grains of posterior pituitary desiccated substance three times daily caused the blood-sugar curves to become perfectly normal. This favors the view that in cases of hypopituitarism it is the posterior lobe which is chiefly concerned with the altered carbohydrate metabolism. Pituitrin had less influence. In the third boy, with more normal general development and with normal sexual development, the anterior lobe was that which had the correcting effect. The slightly inferior influence in the blood-sugar curve of the whole gland substance in the above three cases appears to indicate that in these cases the good effect on carbohydrate metabolism obtainable by giving the appropriate gland substance may be counteracted to some extent by combining it with the extract of the other lobe. It would appear to the authors also that pituitary gland substance given by the mouth is not inert. Considering the cases generally, whole gland gives quite good results. Giving small doses of thyroid seems to amplify the effect of the pituitary gland. Thyroid gland may reduce weight in these cases, but does not restore carbohydrate metabolism to normal. When the blood-sugars were reduced to normal a considerable clinical improvement took place in the patients. References, photographs, and figures accompany this article.

Folkmar, E. O. BASAL METABOLISM OF FAT. [Uge. f. Laeger, Vol. 86, Oct. 9. B. M. J.]

This author has investigated the basal metabolism of 21 women, 10 of whom were suffering from adiposity alone, while the remainder were suffering also from well defined adiposalgia. In no case was there evidence of advanced cardiac insufficiency or of catarrh of the respiratory tract. In every case the basal metabolism was found to be reduced, the reduction varying from 3 to 20 per cent. These findings doubtless represented an underestimate of the reduction of the basal metabolism, for the conditions under which the investigations were carried out were not ideal, the patients' pulses often being faster than usual at the time of

the examination. No relationship was established between the degree of reduction of the basal metabolism and the age and weight of the patients. With regard to treatment in these cases, the author has controlled the influence of various thyroid preparations by means of concurrent basal metabolism examinations, and, with the exception of only one preparation, which was Danish, he found that the various thyroid preparations on the market were either inert or very variable in their action. Only on one occasion did he have to discontinue thyroid medication for a short time on account of the palpitation of the heart provoked. Generally speaking, he regards the processes leading to adiposity as representing a vicious circle requiring intervention by such means as reducing the dietary and carefully training the patient's muscles to enable her to take more exercise.

Engelbach, W. JUVENILE ADIPOSITY. [Ann. Clin. Med., 3, 198. Med. Sc.]

This paper describes a series of cases of juvenile adiposity shown before the American Congress of International Medicine. The condition, it is pointed out, is extremely common, but, as children do not tend to suffer from any other complaints at this age, except their physical abnormality, it is often left untreated. Good results can be obtained in pituitary cases by treatment with pituitary extract, and the author claims that the results obtained in one-third of his cases are as striking as those produced by thyroid administered in myxedema. They are not, however, so constant on the whole, for the late diagnosis and late institution of treatment, often many years after the gland has begun to function abnormally, preclude this. He suggests that 70-80 per cent of cases of juvenile adiposity are of pituitary origin, and that the real importance of the adiposity at this age is not so much the cosmetic effects or inconvenience of overweight as the danger signal indicating insufficiency of the anterior lobe, which controls to a large extent the osseous growth and the development and function of the genital system. Consequently such obesity should be regarded as a suspicious sign and treatment should be instituted. If this were done, the author suggests that the number of individuals who go through the adolescent period without proper development and function of the generative organs would be considerably diminished.

Naito, I. OBESITY OF CEREBRAL ORIGIN. [Arb. a. d. Neurol. Inst. Wien, Vol. 25, p. 183. Med. Sc.]

The author investigated the central nervous system and the pituitary body of a man who weighed 91 kilograms when 21, and twice this amount at the age of 40, when he died of pneumonia. At the post-mortem examination a considerable hypertrophy of the right ventricle of the heart and a most pronounced congestion of all organs were observed. In the nervous system only a chronic atrophy of the tuber cinereum and a

moderate degree of internal hydrocephalus associated with a proliferation of the ventricular ependyma were noticed. The pituitary body was unaltered but its infundibulum was enlarged and contained in its cavity groups of epithelial cells arranged in places like portions of a tubular gland. [C. Da Fano.]

Reuben, M. S., Zamkin, H. O., and Fox, H. R. LIPODYSTROPHIA PROGRESSIVA. [Arch. Pediat., Vol. 41, pp. 480-8.]

The first authentic case of this condition was described by Osler in 1895. He had under his care a girl of 10 years of age, in whom the fat of the face began to disappear at 5 years of age. This was followed by emaciation of trunk and upper extremities. At 28 years of age the process became arrested. The patient was otherwise in perfect health. Other cases have since been described, but it was only in 1911 that Simons named the condition "lipodystrophia progressiva." In the present paper the authors review 55 cases from the literature and also describe 5 cases of their own. In the great majority the age of onset was from the sixth to the eighth year. There is a marked disproportion between the upper and lower parts of the body, the face has a cadaverous expression, and there is a symmetrical disappearance of the fat of the face, neck, chest, arms, and abdomen. The lower extremities are either normal in contour or adipose. These children otherwise enjoy perfect health. The etiology of the condition is obscure and treatment ineffectual. Glandular treatment has been employed in the present series of cases without the slightest effect.

Wilhelmj, C. M. HETEROACTIVITY OF THE PITUITARY GLAND WITH HYPERTHYROIDISM. DISCUSSION OF THE SYNDROME AND REPORT OF AN ILLUSTRATIVE CASE. [Endocrinology, Vol. 8, No. 4, pp. 532-550.]

In the analysis of this case the author has used the anatomo-physiological classification of Engelbach and Tierney. This classification considers the two lobes of the pituitary gland as functionally separate. The anterior lobe governs skeletal growth, development and function of the sexual organs and secondary sex characteristics. The posterior lobe has an important influence on body metabolism, carbohydrate tolerance, blood pressure, temperature, and the contraction of smooth muscle. In connection with the present case it is important to emphasize the fact that hyperactivity of either lobe, especially the anterior, is very often followed in later years by hypoactivity of one or both lobes; a patient may therefore present all the signs of hyperactivity but actually be suffering from a high grade hypofunction of one or both lobes. The patient was a young unmarried female who complained of great fatigability and general malaise, dizzy and fainting spells, loss of weight, constipation, very severe and constant headaches. Physical examination revealed the signs of preadult hyperactivity of the anterior lobe of the pituitary gland, with a slightly enlarged and pulsating thyroid. The pituitary diagnosis was

further corroborated by a history of very rapid growth in childhood, so that her present height (5 feet, 10.5 inches), had been attained by the age of fourteen years. Special and metabolic studies revealed: (1) A low and unstable blood pressure, with a marked fall in systolic pressure when the upright posture was assumed. (2) Basal metabolism, plus 23 per cent. (3) A positive Goetsch test. (4) Increase in carbohydrate tolerance.

The treatment consisted in giving 40 grains of whole pituitary gland by mouth daily and 1 c.c. of pituitrin (S) intramuscularly twice weekly. Improvement was slow but progressive and fluctuated with the regularity of the above treatment. Subjective improvement was complete. Objective improvement consisted of: (1) The establishment of a normal and stable blood pressure. (2) Gain in weight. (3) Restoration of the sugar tolerance and basal metabolism to normal. (4) Relief of the atonic constipation. The patient was observed for about one and one half years, during which time the improvement was maintained as long as the treatment was continued. This symptom complex of hypoactivity of the pituitary gland with hyperthyroidism is not an uncommon one, and it is important to differentiate it from pure uncomplicated hyperthyroidism. [Author's abstract.]

Borak, J. D. THE TREATMENT OF CLIMACTERIC CONDITIONS BY X IRRADIATION OF THE PITUITARY AND THYROID GLANDS. [Brit. J. Radiol., Vol. 29, p. 289. Med. Sc.]

A method of influencing certain transient climacteric symptoms by means of X-rays is described in this paper. The conclusions are based on the results of some 50 cases. The symptoms, which do not seem to be associated with any particular type of constitution or mentality, occur at irregular intervals over months or even years. They differ from the usual forms of climacteric malaise and manifest themselves as transitory, though severe, migraine, changes in blood-pressure, palpitations, constipation, motor irritation, paresthesia, and coldness of the extremities. Many cases at this time also show increase in weight, though in others a loss is recorded. These symptoms often precede the menopause and may become severe when it is well established. They also occur after enucleation of the ovaries or after X-ray castration. Investigations directed to ascertain the cause of transitory ovarian symptoms have invariably resulted in failure. It is suspected that there is a definite connection between these organs and the thyroid and pituitary glands. Radiation of these glands has constantly been employed in the present investigations; the hypophysis was radiated in 37 cases, the thyroid in 13. In all cases the symptoms are said to have disappeared in a remarkably short time, and in most no further treatment was given. The cases which had gained weight appeared to respond most satisfactorily to radiation of the hypophysis. The best thyroid response came from those who had lost weight. Control experiments were undertaken in order to ascertain whether psychological

influences could play any part in these results, but radiation of other parts of the body and other control experiments showed that this effect must be attributed to radiation of the glands mentioned. In general the cases improved in a few days, but if, after 8 days, no considerable amelioration was effected, another dose was given, but more than three doses with 8 days' interval were seldom necessary. The technic is simple and is described in the paper. The thyroid is treated as is usual for Graves' disease. The technic for radiation of the hypophysis is similar to the technic for radiography of the sella turcica.

Hughson, Walter. MENINGEAL RELATIONS OF THE HYPOPHYSIS CEREBRI. [Johns Hopkins Hospital Bulletin, Vol. 35, p. 232.]

General descriptions of the relations of the leptomeninges fail in every instance to make more than the most casual reference to the possibility of their having any definite distribution around the hypophysis cerebri in the sella turcica. References to this subject in the literature are few and conclusions are unreliable. In order that an investment of the pituitary body by the meninges and their enclosed subarachnoid space may be possible, two facts must be established. First, the complete separation of the stalk of Rathke's pouch from the buccal cavity before the central nervous system has been completely surrounded by mesenchymal cells destined to form the arachnoid and the pia mater. Second, continuity of the subarachnoid space, both anatomically and physiologically, around the gland. These conditions have been complied with in every detail. These observations have been made on dogs and cats and also the embryos of these animals, and corroborative evidence has been gained by study of reconstructions of human embryos. The stalk of Rathke's pouch becomes completely separated at the 22 millimeter stage of the embryo's development, while a complete investment by the mesenchyme does not take place until the 32 millimeter stage. Two methods of demonstrating the physiological patency of the subarachnoid space in this region have been used. A negative pressure in the cranial cavity was produced by the intravenous injection of hypertonic salt solution and the replacement with sodium ferrocyanide and iron-ammonium citrate. The foreign salt was fixed in situ. A second method was by injecting a solution of the above salts under increased pressure. The precipitated Prussian blue granules in every instance were found surrounding the pituitary gland in the sella turcica, and were also found in the substance of the gland itself, principally the pars buccalis, indicating the intimate relation between cerebrospinal fluid and the circulatory system at this point. The subarachnoid space was demonstrated anatomically by serial sections of the pituitary of dogs who had been dealt with, as described above, and the delicate single layer of mesenchymal cells forming the pia and arachnoid were clearly seen. The continuation of the subarachnoid space around the hypophysis in the sella turcica was thus regarded as definitely established. [Author's abstract.]

II. SENSORI-MOTOR NEUROLOGY.

5. CEREBELLUM; PONS; PEDUNCLES.

Lhermitte, J. CEREBELLAR SYNDROMES IN THE AGED. [Paris Médical, October 28, XII, No. 43. J. A. M. A.]

Lhermitte gives a very careful study of these syndromes, which are more frequent than we believe. The differential diagnosis between them and the lesions of corpus striatum and the pyramidal tracts is given.

Papez, J. W. THE RUBRO-SPINAL TRACT, MARCHI METHOD. [Proc. Amer. Assoc. Anatomists, in Anatomical Record, April 20, XXV, p. 147.]

Following a tegmental lesion in a rat in which the nucleus ruber of one side and the contralateral rubrospinal tract were injured there was after seven days a complete bilateral descending degeneration of the rubrospinal tracts. From the injured nucleus the rubrospinal tract passed through the ventral decussation of Forel to the opposite side and descended medial to the lateral lemniscus, ventral to the trigeminus, facial nucleus, etc., in the exact position described in various mammals by other authors. This confirms Held's myelination observations on this bundle in the rat. The opposite bundle degenerated downwards below the lesion, but no retrograde degeneration towards its nucleus of origin occurred, such as van Gehuchten found in rabbits twenty-five to thirty days after the lesion. However, the cells of the nucleus ruber appear to have undergone all but complete chromatolysis as observed by van Gehuchten in the rabbit six and one-half days after injury of the tract. [Leonard J. Kidd, London, England.]

Rademaker, G. G. J. THE RED NUCLEUS, THE INCIDENCE OF MUSCLE TONE, AND POSTURAL ACTIVITY. [Klin. Wchnschr., II, 404; Med. Sc.]

In this short preliminary account, Rademaker describes experiments which indicate that the red nucleus is the mass of gray matter concerned in the "righting" reflexes ("Stellreflexe") of Magnus and de Kleijn (*cf.* Medical Science, VII, 109, 1922). In the "midbrain" preparation which shows tone of normal intensity and distribution and possesses all the postural reflexes of the intact animal, the plane of transection passes cephalad to the red nucleus. In the "decerebrate" animal, on the other hand, which cannot right its head in space and shows the characteristic extensor rigidity described by Sherrington, the plane of transection passes caudad to the red nucleus. Further experiments have succeeded in localizing these postural functions of the intact and "midbrain" animals in the red nucleus and have shown that transection of the rubrospinal tracts as they cross in Forel's decussation is itself sufficient to produce decerebrate

rigidity and to abolish the righting reflexes. The anatomical control of the material was carried out by Winkler.

If, as appears from this short account, the functions of the red nucleus in respect of posture have at last been settled, the advance in knowledge thus gained will be of the greatest interest and importance to neurologists as well as to physiologists, and a full account of the work will be eagerly awaited. [F. M. R. Walshe.]

Sachs, E. PAPILLOMA OF FOURTH VENTRICLE. [Am. Arch. of Neur. & Psych., October, VIII, No. 4; J. A. M. A.]

Sachs cites the case of a man fifty years old, who complained of headache, dizziness and falling on walking. His past history was unimportant. Two and a half years previously he began to have headaches and pain in the lower part of the abdomen. He fell to either side, but most frequently forward. The eyegrounds and visual fields were normal. The symptoms suggested a bilateral lesion, growing slowly, superficially located and not near the nuclei of the cerebellum. Under local anesthesia the fourth ventricle and the vermis were exposed and a white glistening tumor was seen filling the fourth ventricle. This tumor was well encapsulated and was enucleated without much difficulty and without pain to the patient. The tumor extended up into the aqueduct of Sylvius, which was greatly dilated. The only discomfort complained of during the operation was pain in the abdomen. The patient made an uneventful recovery and left the hospital on the eighteenth day after operation. A year after the operation he was entirely free of symptoms with the exception of slight ataxia when he walked rapidly up stairs. The three reasons for presenting the case are: (1) The constant pain in the abdomen, which might be interpreted as evidence that there were afferent fibers in the vagus nucleus. This abdominal pain was present both before operation and when the tumor was lifted from the floor of the fourth ventricle. (2) The tumor had completely obstructed the aqueduct of Sylvius and, therefore, produced an obstructive hydrocephalus, and yet the patient had normal eyegrounds. (3) This case demonstrates the possibility of removing tumors of considerable size in the region of the fourth ventricle through a simple median line incision without freeing the muscles from their attachment to the superior curved line of the occipital bone.

Bériel, L., and Wertheimer. LARGE TUBERCLE OF PONS IN TYPICAL POST-ENCEPHALITIC PARKINSONISM. [Lyon Médical, May 10, CXXXII, p. 408.]

The writers here report a large tubercle of the pons which was unexpectedly found in a case that was clinically typical of a post-encephalitic Parkinsonism. The patient was seen in the acute stage, in the gradually evolving Parkinsonian stage, and in the terminal stage of cachexia. Although the tubercle was so large that it involved almost the whole

extent of the pons, it gave rise to no special signs. In addition, there were the usual diffuse lesions of post-encephalitic Parkinsonism, quite definite in the caudate and lenticular nuclei, but unusually intense in the locus niger. In this case, then, there were the ordinary anatomical sequelae of encephalitis but with this peculiarity, that a large tubercle had developed in the pons without apparently modifying the symptomatology. [Leonard J. Kidd, London, England.]

6. ENCEPHALITIS.

Ayres, Octavio. EPIDEMIC ENCEPHALITIS. [Arch. Brasil. Med., XIV; J. A. M. A.]

Ayres reiterates that never before has a neurologic morbid entity been known capable of producing such a bewildering array of symptoms as we encounter in "Economo's disease." He compares the clinical picture with the necropsy findings in a series of cases. The findings indicated injury of the vessels rather than of the cells, but nothing could be found to explain its nature, and the diffusibility of the lesions renders exact classification impossible. The microscopic lesions, however, were most pronounced in the nuclei at the base of the brain.

Verger, H. UNILATERAL BRADYKINESIA. [Jl. de Méd. Bord. 54, p. 746.]

In this symposium number of this journal devoted to epidemic encephalitis the present writer describes a case in which the hesitation and slow response of movement were confined to one side. The movements of the left hand and leg were lively. The visage was like that of a wax figure, and the "motor viscosity" is exaggerated by the mental disinclination to make the slightest effort. Memory and the gnostic functions seem to show no impairment, although they proceed as sluggishly as the muscular movements.

Sterling, W. TETANOID AND TETANIFORM SPASMS IN EPIDEMIC ENCEPHALITIS. [Revue Neurologique, XXXI, Vol. II, No. 5, p. 484.]

The author reports a series of cases in which there occurred during the course of the disease a painful spasm in some part of the body. In the first case the spasm was in the left leg and lasted two weeks. It was not relieved by medication. The great toe was in dorsal flexion; the other toes were plantar flexed. The pain ceased when the spasm relaxed. In a second case it affected the bicep; in a third case the muscles of the thenar eminence; and in a fourth case the facial muscles. [Camp, Ann Arbor.]

Bramwell, E. THE MENTAL SEQUELAE OF ENCEPHALITIS LETHARGICA. [Br. Med. Jl., Jan. 17, 1925.]

In this discussion at the Royal Society Bramwell said that recent experience of epidemic encephalitis had served to demonstrate that the

clinical picture and the ultimate outlook were both much more varied than was at one time believed. It was now known that in some cases the onset was insidious and the course slowly progressive, and it was generally recognized that months, or even years, after the patient appeared to have made a more or less complete recovery remissions might occur. It was impossible even to express a dogmatic opinion as to when the patient was to be regarded as out of danger, and as to whether or to what extent the existing manifestations of the disease cleared up. Were the mental symptoms themselves sufficiently characteristic and distinctive to permit of a diagnosis apart from the help that might be afforded by the history and the presence of physical manifestations? Personally he believed that this was rarely if ever possible. He went on to draw attention to the mental sequelae which had specially impressed him. In the case of adult patients the complaint was often made by them—if they complained of anything at all—was (in his own words, of course, not in theirs) slow cerebration, mental fatigue, and defective application. It was almost unnecessary to remind his audience that in those cases in which the Parkinsonian syndrome was present the expressionless face so well recognized might give a misleading impression of the patient's mental capacity. Another feature was that the patient who had had a more or less acute attack of epidemic encephalitis could seldom recall any of the events pertaining to the earlier stages of his illness. These people, however, seemed to regard their condition, mental and otherwise, very complacently. Pronounced mental depression was very uncommon. He had never met a case of suicide, although two or three patients of a nervous temperament had volunteered the remark that they felt as if they might do something desperate. A true psychosis calling for certification was, to judge from his experience, a very exceptional sequel to epidemic encephalitis. Disorientation and more or less mental confusion were often observed about the time of onset of an acute case, and he had met with two or three cases in which the patient was maniacal. These phenomena, however, were to be associated with the acute stage of the disease, and not as sequelae in the true sense of the word. On the other hand, he had been impressed with the number of cases in which the patient found himself unable to cope with his duties on returning to work, and the patient's recognition of his incapacity had led to sleeplessness and other secondary psychical conditions. In children the great majority of the cases he had met with had conformed closely to the adult type, though there were differences. He had met with a number of cases in which parents had remarked on the altered disposition of the child and had complained of his irritability and mischievousness. In only one of his cases was moral deterioration present to a pronounced degree at the time the patient came under observation. These moral defects did not appear to be met with in adults. Another thing met with in children, but not often in adults, was the disturbance of the sleep rhythm. The speaker dealt with points

to be noticed in diagnosis, and referred to the great importance of the Parkinsonian syndrome. Some slight immobility of the face, an unnatural pose of the arm or hand, or an apparent stiffness about the trunk had suggested the appropriate line of inquiry; otherwise one might have failed to recognize the condition. A great variety of tremors and anomalous movements also were met with, and all such movements should nowadays bring to one's mind the possibility of epidemic encephalitis.

Krebs, E. INVOLUNTARY MOVEMENTS IN EPIDEMIC ENCEPHALITIS AND THEIR INTRINSIC CHARACTER. [*Revue Neurologique*, An. 31, T. 2, No. 3, p. 222.]

In three cases two locations on the same side were affected. In one of these there was a myoclonus of the face and in the other two a facial spasm. The fourth case was affected in all four extremities. The rhythm was different in different cases but was constant in each subject. The movement showed in general a tendency to rotate the extremity on its long axis. Irritation of the skin or mechanical excitation of the muscles had little effect on the movements, but emotion or psychic stimuli increased their violence. They stop during sleep. [Camp, Ann Arbor.]

Cloake, P. C. P. MENTAL SEQUELAE OF ENCEPHALITIS. [*Br. Med. J.*, Jan. 17, 1925.]

This author, in discussion of Bramwell's paper, said that the mental symptoms which arose in toxic infectious states were of a fairly uniform nature, chiefly impairment of apprehension of environment, of the power of retaining mental impressions, and of memory and its activization, and variability in mental capacity and the level of attention. These disturbances resulted in the well known clouding of consciousness, often amounting to delirium, with hallucinations, illusions, and disorientation. It was important to realize that the mental symptoms of acute lethargic encephalitis belonged essentially to this toxic infectious group. But in addition there was one most important complicating factor, one which gave the disease its distinctive character, and was closely bound up with the pathogenesis of all its mental manifestations; this was lethargy. Though the other acute mental symptoms appeared to be due to a toxic affection of the brain, and hence were more marked at night, when toxic effects were commonly most apparent, it was difficult to escape the view that lethargy arose from quite another cause. The lethargy appeared to be due to the localization of the disease process predominantly in and about the mid-brain. Sometimes lethargy preponderated, and the toxic symptoms were slight; in this case the state of prolonged sleep was found, so common in the early days of the acute illness; at other times the toxic symptoms were more severe, and there was an active delirious state at night which might continue in a milder form during the day. The view that the lethargy was not a result of the toxemia was supported by the fact that

it was quite easy, as a rule, to wake the patient up, when he was frequently as clear as if awakened from normal sleep—a very unlikely possibility if the drowsiness were really a toxic manifestation. In the coexistence of lethargy, a phenomenon perhaps dependent upon inflammatory deformity in the mid-brain, and the toxic infectious mental reaction, was to be found the explanation of all the psychic symptoms of acute encephalitis lethargica. The speaker went on to consider closely the mental symptoms of cerebral damage, and to argue that psychoses of the constitutional type probably did not occur, except as accidents, in relation to encephalitis lethargica.

7. BASAL GANGLION.

Bing, R. CHOREA AND ATHETOSIS. [Schw. med. Woch., LIV, June 26.]

Bing surveys the results of the newer investigations on the movements in chorea and athetosis. They differ from the affections of the efferent paths of the so-called intentional movements. Frédéricq and Nuel pointed out that even the latter are intentional only with regard to the end-effect, for instance, bending the knee. The single muscles (biceps, femoris, etc.) are not subject to the will. The phylogenetically older part of the striate body (globus pallidus) is functionally quite different from its newer acquisition, the neostriatum (putamen and nucleus caudatus). In spite of rare well examined instances without any demonstrable changes in the brain, the basal ganglions (corpus striatum and optic thalamus) are affected as a rule in chorea. Changes in the putamen seem to occur more with choreatic movements, changes of the nucleus caudatus more with the athetotic. Investigations on brain changes in nervous distemper of young dogs would be valuable. Nothnagel localized the origin of automatic movements in the nucleus caudatus. The neostriatum may be compared to an accumulator of nervous energy. It inhibits the irrational impulses. Embryos of the fourth or fifth month have athetotic movements because the caudate nucleus does not brake, as yet, the paleostriatum (Minkowski). The useful automatisms may be affected by lesions of the paleostriatum (Parkinsonism, etc.). Scopolamin and, to a less extent, duboisin seem to owe their action to a nonspecific inhibition of the central organs from paralysis of the parasympathetic.

Spatz, H. SUBSTANTIA NIGRA AND THE EXTRAPYRAMIDAL MOTOR SYSTEM. [D. Ztschr. f. Nervhik., Vol. LXXVII, Nos. 1-6.]

Spatz found in cases of encephalitis epidemica which died in the acute stage that the disease had attacked chiefly the gray matter of the third ventricle, of the mesencephalon where most frequently it was the substantia nigra which was affected, of the pons and in a lesser degree of the medulla oblongata. In the later stage of the disease the alterations were limited to more isolated areas, chiefly the substantia nigra, which

showed loss of nerve cells and changes in the fat and iron constituents. These findings are supported by the cases described in the literature in their testimony that alterations in the substantia nigra may induce disturbances in the extrapyramidal motor system and that when severe they may produce the Parkinson syndrome. There are also cases of paralysis agitans where the substantia nigra is intact but the globus pallidus chiefly and also the corpora striata are affected. Spatz points to the close morphological and histochemical relation of these areas and believes that the substantia nigra, the globus pallidus and the striatum are members of one system. They have an analogous origin from directly successive portions of the matrix of three cerebral vesicles.

The substantia nigra is present in all mammals and probably in lower vertebrates as well, but the melanotic pigment from which it derives this name is peculiar to man, in whom it begins to appear during the fourth year of life. Two distinct anatomical regions have been defined, one dorsal and mesial in which the cells are packed closely together—*zona compacta*; and the other ventral, lateral, and oral, in which the cells are separated by a network of nerve fibers—*zona reticulata*. These zones can be distinguished by the naked eye in sections that have been fixed in 96 per cent alcohol; the *zona compacta* whose cells contain melanin is black, whereas the *zona reticulata* whose cells contain a pigment that is not melanin is an orange-red color like that of the globus pallidus and red nucleus. In a section stained for cells it is easy to underestimate the extent of the substantia nigra as a whole because at first sight it is only the *zona compacta* that has the appearance of a nucleus, but in the iron reaction we have a simple method for demonstrating the boundaries of the entire region including the *zona reticulata*, for the substantia nigra, especially the *zona reticulata*, gives an iron reaction of an intensity which is equalled by the globus pallidus only. By this method we discover that the substantia nigra extends much further orally than is indicated in the textbooks; in its most oral parts it no longer deserves its name because the black pigment is usually absent anterior to the plane passing through the posterior pole of the corpus mamillare, but the red zone can usually be traced as far forward as the frontal extremity of the corpus mamillare, and in suitable preparations it can be seen that islands of cells connect this zone with the gray matter of the globus pallidus. In the caudal direction the *zona reticulata* diminishes in extent more rapidly than the *zona compacta*, and towards the pons it has disappeared in parts where the latter is still present.

Of the function of this considerable mass of gray matter practically nothing was known until quite recent times. In 1895 Brissaud described a case in which a tubercle in the substantia nigra on one side gave rise to symptoms of Parkinson's disease on the other, and he stated that "une lésion du locus niger pourrait bien être le substratum anatomique de la

maladie de Parkinson," but this observation received no attention at the time, and seems to have been forgotten until 1919 when Trétjakoff referred to it in a thesis wherein he described a number of cases of paralysis agitans with a lesion in this part. The writer found gross changes in the substantia nigra in all of his cases of paralysis agitans, but never in a case that was free from symptoms of this disease; he therefore concluded that changes in this part caused the disease and that it was a center for the regulation of tone. The contention that lesions of the substantia nigra can produce symptoms of extrapyramidal disease has received abundant confirmation during the last few years, especially from studies on the morbid anatomy of encephalitis lethargica, for in those cases in which the Parkinsonian syndrome has been a sequel, lesions of the substantia nigra seem to be the only constant finding. This, of course, must not be taken to imply that the syndrome results from lesions of this part alone; it has been proved that it may be produced by lesions in other parts of the extrapyramidal system, in the globus pallidus, for example; and in cases of true paralysis agitans at least (no case of Parkinsonism following encephalitis lethargica has been described for which this was true) the substantia nigra may be intact.

But can a lesion exist in this part without giving rise to symptoms of extrapyramidal motor disease? Spatz has never seen such a case, but Lhermitte and Cornil reported at the Neurological Congress in Paris seven instances in which this occurred. These were all cases of widespread disease, such as subacute combined degeneration, cerebral tumor, syringomyelia, transverse lesion of the spinal cord, senile dementia, etc. These investigators concluded that a lesion of the substantia nigra alone is not sufficient for the production of the Parkinsonian syndrome, but a moment's thought will show that this conclusion is not justified by the evidence they produce, for the appearance of the syndrome, which is a release phenomenon, can only be expected when the integrity of many other tracts is unimpaired; it stands to reason, for instance, that in a case of transverse lesion of the cord a simultaneous lesion of the extrapyramidal system may produce no effects. The work of others has drawn attention to the importance of other members of the group of centers which we call the extrapyramidal motor system—the globus pallidus, the red nucleus, the body of Luys, the nucleus dentatus, and the rest; in this excellent paper morphological, histochemical, and clinical evidence is used to make it clear that the substantia nigra is a very important member of this group.

Byschowsky, G. PERIODIC STUPOROUS CONDITION WITH ANATOMICAL BASIS. [D. Ztschr. f. Nervhkl., Vol. LXXVIII, Nos. 1, 2.]

Case histories so far reported, the author reminds us, have led to the supposition of a connection between stupor and injuries of the tuber cinereum or of the hypophysis. He reports a case in which the anatomical

condition could be found. There was an endothelioma of the dura mater which had produced general pressure symptoms and moreover had crowded the corpus striatum of the same side and had injured the nucleus caudatus, putamen and globus pallidus and the thalamus opticus.

Edwards, D. J., and Bagg, H. J. LESIONS OF THE CORPUS STRIATUM BY RADIUM EMANATION AND THE ACCOMPANYING STRUCTURAL AND FUNCTIONAL CHANGES. [Am. J. Physiol., LXV, 162.]

Sharply localized necrotic lesions were produced in the corpus striatum of dogs by buried radium emanation tubes. The outstanding results of these experiments were: first, the comparatively slight degree of alteration in the general behavior of these dogs following the destruction of large portions of the corpus striatum, and, secondly, the capacity of compensating in a short time for any defects in motor control. There was no tract degeneration in the spinal cord nor structural changes in the liver or other organs. This is of interest in connection with the occurrence in man of hypertrophic cirrhosis of the liver in association with progressive testicular degeneration. The experimental animals were kept from two to thirty-two weeks. Some exhibited temporarily signs of dysphagia, dysarthria, conjunctivitis, clumsiness in slow movements, tremor, and hypertonia. All indications of the disturbance usually disappeared within four weeks.

Camp, C. D. CHOREA AND CHOREIFORM AFFECTIONS WITH SPECIAL REFERENCE TO ETIOLOGY. [Medical Clinics of North America, VI, 1179.]

Choreic movements indicate that a certain portion, a definite locale in the brain, has been affected and do not indicate in any way the cause of that lesion. Clinical studies of choreic affections show that there probably are considerable and important differences in the etiology of the disorder even though the brain lesion is localized. The first patient was a girl sixteen years old, who had had interstitial keratitis at the age of six. While the patient's serology was negative both as to blood and spinal fluid, her father gave a history of untreated syphilis. The patient was treated with mercury and iodid and was cured. The seventh patient was a farmer's wife, sixty-eight years old. Her twitchings began one and one-half years prior to admission. The chorea was more marked on the right side. It was not severe, although the patient occasionally dropped things out of her hand. There were signs of arteriosclerosis in the fundus oculi, and the mental examination gave evidence of senility. It seems entirely possible that in such cases there are small areas of softening in the lenticular nuclei, possibly the result of arteriosclerosis.

Possibly the majority of cases of chorea are due to chronic infection with perhaps a focal origin. Hereditary or acquired syphilis may be the cause in some cases.

Patients with Sydenham's chorea recover, although the duration of the disease is difficult to predict. The treatment of these patients consisted of rest in bed, more or less isolation, and the administration of Fowler's solution in 3 to 5 drop doses 3 times a day. The salicylates and aspirin seemed to be of little use.

Rosenthal, K. TORSION DYSTONIA AND ATHETOSIS DUPLEX. [Arch. f. Psych. u. Nervkr., Vol. LXVIII, Nos. 1, 2, 1923.]

The author reports two cases which he makes the basis of a discussion of the differential diagnosis between idiopathic athetosis duplex and that form of torsion dystonia which resembles it. He believes that a sure distinction is not possible merely on the grounds of clinical symptoms. He suggests that it may be more correct to use the name hypersynkinesia idiopathica for the condition as it may be one and the same disorder. This name takes account of the most obvious symptoms, the motor unrest and the coupling of voluntary and involuntary movements. It also leaves open the still undetermined cause of the disease condition and the absence of other symptoms which would point to that cause. Torsion dystonia in the narrower sense, in the form of dysbasia-dysteria, he suggests, is closely related to this hypersynkinesia idiopathica, in time and mode of origin and in extent of the disease process but with variation in the pathologic-anatomic processes. Both have to do with disease of a portion of the extrapyramidal system. One may follow Bielschowsky and count them with the heredodegenerations and put them under the subgroup of Gower's abiotrophies.

8. TESTS, REFLEXES, SYMPTOMS.

Levaditi, C. NEUROTROPIC ECTODERMATOSES. [Paris, Masson et Cie.]

Under the above title Levaditi has grouped a number of diseases caused by certain ultramicroscopic viruses, which show an affinity for tissues derived from epiblast, viz. skin, cornea, nervous system (central and peripheral), testis, etc., and he presents in this book the result of the researches made by himself and others, in France and elsewhere. The book covers practically everything which has been published on this subject up to and including the greater part of 1922. It is divided into three parts. The first deals with poliomyelitis (sporadic and epidemic), the second part deals with encephalitis lethargica, whilst in the third part he gives an account of the interrelationship between the viruses of these two diseases and those of rabies, vaccinia and herpes.

Although short accounts are given of the clinical, epidemiological, and other characters of these diseases, the main part of the work deals with the experimental investigation and pathology of their respective viruses. It is particularly in connection with the latter aspect of the

subject that Levaditi himself has contributed so much to our present knowledge of these viruses in collaboration with Landsteiner, Harvier and others.

The following is a short summary of the excellent description which Levaditi gives of the present state of our knowledge of these viruses:

Poliomyelitis. The virus of poliomyelitis is pathogenic to monkeys and apes, and only rarely to rodents. The disease can be transmitted in series by injecting emulsions of virulent cord or brain subdurally or intraperitoneally, and the period of inoculation varies from five to fifteen days. The histological picture of the experimental disease is the same as that found in man in both fatal and nonfatal cases. Flexner and Noguchi claim to have grown the virus by the ascitic fluid fresh tissue method, and describe certain "globoid bodies" as being the virus itself. Levaditi, using tissue cultures as a medium, has succeeded in reproducing the disease experimentally after the fifth subculture. The virus traverses Berkefeld and Chamberland filters and can be preserved for as long as six years in 50 per cent glycerine, preferably in the cold (minimum temp. -2° C. to -8° C.). The virus is not destroyed by 1 per cent thymol or 0.5 per cent phenol. In monkeys the disease can be reproduced by inoculation into the central nervous system, peritoneum, veins, anterior chamber of the eye, lymphatic glands, and nasal mucous membrane. In human cases the virus can be recovered from the tonsils, lymphatic glands, and nasal mucous membrane, as well as from various parts of the central nervous system. The cerebrospinal fluid in man is virulent only during the incubation period. In the infected animal, in addition to the same organs as in man, the blood and the salivary glands contain the virus. The nasopharynx and nasal mucous membrane are the most likely portals of entry in man, and healthy contacts have been found to be carriers of the virus. Dust and insects apparently play no part in the dissemination of the disease.

The presence of immune bodies can be demonstrated in the blood-serum of human cases, as well as in experimental animals, within a few days of the onset of symptoms. Their presence in the cerebrospinal fluid can also be demonstrated, but only for a period of two months. The blood serum of human cases of the disease has been shown to be capable of neutralizing the virus *in vitro* at periods varying from three days to three years after the onset of symptoms, and this method can be used for the purpose of diagnosis. Prophylactic vaccination with dried or chemically treated virulent spinal cord has not yielded good results. Intrathecal injection of the blood serum of convalescents may stop short an attack of infantile paralysis in man.

Encephalitis lethargica. The second part of the book is practically a reprint of the various papers which Levaditi and his collaborators had contributed to the Annales and the Bulletin of the Pasteur Institute, and

of which an abstract has already appeared in *Medical Science*, 1922, VII, 247. From his experimental studies Levaditi has come to the conclusion that the virus of encephalitis lethargica is only a more virulent and more neurotropic variety of the virus of herpes and of the virus which can be isolated from the saliva of healthy carriers.

Neurotropic ultraviruses. The third and shortest part of the book is devoted to the question of the interrelationship between the viruses of poliomyelitis, rabies, encephalitis lethargica, herpes and vaccinia. The following are his main conclusions:

1. Cross-immunity experiments between the viruses of poliomyelitis and of rabies are invariably negative. The same is true in the case of rabies and encephalitis lethargica.

2. Corneal inoculation of the virus of rabies confers the disease on the rabbit, but without the development of a keratitis as is the case with the virus of encephalitis lethargica.

3. The virus of poliomyelitis does not show the same affinity for the skin and the cornea which the viruses of rabies and of encephalitis lethargica do.

4. The virus of vaccinia produces an encephalitis, transmissible in series in rabbits, provided the first few passages are made in the testicle.

In the last chapter the author summarizes the special characteristics of the infections which the ultramicroscopic viruses give rise to, and to which he has given the collective name of neurotropic ectodermatoses.

They have the following points in common. They are all ultramicroscopic and filterable; they can be preserved in the dry state or in glycerine; they are destroyed at about the same temperature; they cannot be grown *in vitro* like ordinary bacteria. They all show a marked affinity for tissues derived from epiblast, though in different degrees, and none for tissues derived from mesoblast. On the other hand, they differ from each other in their degree of pathogenicity for various species of animals and cross-immunity experiments are invariably negative. Other differences can be demonstrated in their degree of affinity for the various tissues derived from epiblast, *e.g.*, the virus of vaccinia shows a constant and essential affinity for the skin and cornea, but only a mild and inconstant one for nervous tissue. Again, in the encephalitic group of viruses (including encephalitis lethargica and herpes) that of herpes shows a constant affinity for epithelial tissues and a variable one for nervous tissue. On the other hand, the virus of encephalitis lethargica shows a constant affinity for all epiblastic tissues. The virus of rabies shows an affinity for all epiblastic tissues, but produces pathological lesions in the central nervous system only. The virus of poliomyelitis shows a constant affinity for the central nervous system (more particularly for the gray matter in the anterior cornua of the cord), but it shows no affinity for the skin or cornea. With reference to the dif-

ference between the affinities of the two members of the encephalitic group of viruses, attention is drawn to a similar state in the neurotropic and dermatropic varieties of *Spirochaeta pallidum*, these two varieties having been isolated from a skin lesion (*e.g.*, chancre) and the central nervous system (*e.g.*, general paralysis) respectively. [J. R. P. in Medical Science.]

9. MENINGES.

Berghausen, Oscar. SIGNIFICANCE OF MENINGEAL REACTIONS. [Ohio State Med. J., XVIII, Sept., p. 606.]

Clinically we recognize symptomatic types of infection of the central nervous system, with a well defined clinical syndrome; we must concede the possibility of an asymptomatic type, the result of congestion or of an infection, and not leading to a definite clinical syndrome. From a cytological examination of the spinal fluid we are justified in speaking of serous, lymphocytic and polynuclear types of meningitis. Peculiarly the meningitis may begin as a serous inflammation and later develop into a lymphocytic or polynuclear type. From a chemical examination of the fluid we may speak of alkaline fluids containing a slight or heavy increase in the protein substance, or of acid fluids containing a heavy increase in protein. The alkaline fluids are obtained from patients suffering from tuberculous, syphilitic or influenzal meningitis, encephalitis lethargica, epidemic parotitis, and acute poliomyelitis. The acid fluids are obtained from patients suffering from meningitis due to a pyogenic organism. In serous meningitis with little protein substance in the fluid, we find an acid reaction which becomes alkaline on standing or shaking. In serous meningitis the fluid is usually free from formed elements and increase in protein, and symptomatic relief follows the spinal puncture. It frequently occurs at the onset of infectious diseases or gastrointestinal disturbances. In the lymphocytic type we have an increase in the pressure, in the globulin and usually in the number of lymphocyte cells, commonly caused by tuberculosis, syphilis, infantile paralysis, mumps, influenza, post-diphtheritic paralysis and encephalitis lethargica. Spinal puncture causes relief temporarily, but not necessarily permanently. When ordinary infectious organisms invade the central nervous system and begin to multiply then the polynuclear type of meningitis develops. A table is given showing the number of cells, the globulin reaction and the Taschiro test of the spinal fluid in the various types of meningeal reactions. The reaction was determined by adding a few drops of a 1 per cent alcoholic solution of phenolphthalein as indicator. The butyric acid method was employed in the determination of the globulin. The reagents used in the Taschiro test were a 1 per cent aqueous mercuric chloride solution and a 3 per cent solution of sulfosalicylic acid. The Taschiro claimed that in tuberculous meningitis the precipitate obtained with the mercuric chloride solution

is twice in volume that obtained with the sulfosalicylic acid reagent, if both be allowed to stand undisturbed for a day or two. The test is carried out by adding 1 c.c. of spinal fluid to each of two test tubes, and then adding 1 c.c. of the one reagent to one tube and 1 c.c. of the other reagent to the second tube. An ordinary homeopathic flat bottom vial was found to serve better than a test tube. The same difference in the amount of precipitation in the spinal fluid obtained from patients suffering from acute meningoencephalomyelitis secondary to influenza or infection about the upper air passages was found. In tuberculous meningitis, however, the precipitate is more voluminous and is quite characteristic. In turbid fluids with polynuclear cells, the precipitates are much greater in volume and usually heavier in the vial containing the sulfosalicylic acid reagent. The colloidal gold curve reaction of Lange was not found to be characteristic, except the so-called paretic zone reaction in clinical paresis or severe types of cerebrospinal syphilis. The examination of the spinal fluid can be of the greatest assistance in the differential diagnosis of infections of the central nervous system, but should be interpreted only in the terms of the clinical picture. The serous and polynuclear types are easily diagnosed as a rule; the lymphocytic types offer the greatest difficulty and usually cannot be differentiated unless the spinal fluid findings and the clinical condition be thoroughly considered. The demonstration of the presence of the tubercle bacillus or of a positive Wassermann reaction in the spinal fluid, are the only findings which can absolutely establish the diagnosis in the lymphocytic types of infection, from a consideration of the spinal fluid alone. The paper concludes with brief abstracts of eighteen case histories giving the diagnosis, chief clinical findings and the data obtained from an examination of the spinal fluid. [Author's abstract.]

Watkins, A. B. K. CASE OF MENINGEAL HEMORRHAGE. [Lancet, March 31, 1923.]

This clinical report showed a bilateral hemorrhage and a laceration of the artery at the foramen spinosum, an orbital hematoma and hyperpyrexia. A ligature of the external carotid controlled the hemorrhage.

Burhans, C. W., and Gerstenberger, H. J. INTERNAL HEMORRHAGIC PACHYMEINGITIS IN INFANCY. [J. A. M. A., 81, March 3.]

Five cases of internal hemorrhagica pachymeningitis have been observed within a period of three years by these authors. This corroborates the statements of Finkelstein and Rosenberg that this disease is more common in infancy than is generally believed. From the standpoint of etiology in these cases, infections, especially syphilis and diphtheria, can be excluded in every instance except in one case in which syphilis may by some be considered to have been a possible factor. From the standpoint of etiology, a poor state of nutrition can be positively excluded in three of the five patients; two were exceptionally well developed

and well nourished infants, and the third was also in a good state of nutrition. The other two patients were in a very bad state of nutrition. From the standpoint of etiology, trauma can be implicated as a factor in four of the five cases. It would seem that subacute pachymeningitis from birth hemorrhage, rendered acute by further physical injury, would explain the development in some cases. In certain groups of infants, there may be a certain predisposition toward the development of pachymeningitis. The prominent symptoms in these five cases which correspond with those described in the literature were: (a) Retinal hemorrhages in four cases. In the one in which they were absent there was the largest collection of fluid in the subdural space. (b) A positive fontanel puncture. This was obtained in the three cases in which it was performed. In one case a characteristic fluid was obtained by spinal puncture. In the fifth, puncture was not performed because of the attitude of the parents. (c) Convulsions. These were present in every case; but since convulsions occur as a result of other injuries and conditions, their appearance is suggestive but not pathognomonic. (d) Bulging fontanel. This symptom was absent throughout the period of observation in three cases; and in a fourth the fontanel did not bulge until the second admission, when it bulged slightly; in the fifth case there was slight bulging on admission. In other words, the absence of a bulging fontanel does not speak against internal hemorrhagic pachymeningitis. (e) Enlargement of the head. This symptom was not definitely present in any case. In only one case was there possibly some enlargement. (f) Nasal discharge. This was present in three cases, and in two of these it was bloody in character. In addition, the following observations were made: (a) In two of the cases in which the calcium content of the fluid obtained through fontanel puncture was determined, it was found to be decidedly lower than that of the blood serum; whereas the inorganic phosphorus content of the fluid and the blood serum was practically the same. Since these results are the same as the figures usually obtained by determinations on whole blood, it would seem logical to conclude that the fluid in these subdural cysts is blood, unaltered except for the solution or digestion of all or a part of the red corpuscles. This conclusion, however, is not supported by the amounts of sodium and potassium, which were the same as in serum; nor by the percentage of protein, which showed great variation. (b) The coagulation time and the bleeding time were normal in the three cases in which the tests were performed.

10. BRAIN, COMPRESSION, CONCUSSION, ETC.

Blumenthal, K. PSYCHOSES WITH HYDROCEPHALUS, MENINGITIS SEROSA, BRAIN TUMOR AND PSEUDOTUMOR. [Zschr. f. d. ges. Neurol., Vol. LXIV.]

The writer studies seven cases of his own and a number from the literature in which different psychotic pictures result because of the variety

of pathological processes involved. The reactions are usually those known as exogenous. The course varies, conditions occurring only once briefly or there are periodically recurring conditions and also those which end in defect states. Neurological symptoms may precede, accompany or follow the psychosis. The acute diseases may last a few days or one to two months. There are twilight states, stuporous states and psychomotor excitement with monotony, stereotypy and verbigeration, epileptic attacks with twilight states and excitement, paranoic formations, anxious confused excitement and progressive dementia. In all these conditions there are usually disturbances of orientation and of attention, weakness of memory, stupor, inhibition of thought and psychic retardation, lack of attention and dullness. Sometimes there is tendency to wit, lack of restraint, euphoria, also irritability, impulsive actions, outbreaks of rage. Most frequently there is amnesia, but where this is absent the retardation and difficulty in memory make one think of psychic anomaly following tumor. The hydrocephalic psychoses remind one in their symptoms sometimes of epileptic twilight states, sometimes of dementia precox especially catatonia. As regards the relative frequency of the individual syndromes they stand midway between the massive gross organic disorders like tumor, commotion, apoplexy and the infection psychoses. In the psychoses depending upon hydrocephalus autopsy often fails to give results on account of the temporary character of the hydrocephalus. Many of them may be bound with brain tumor. The writer suggests therapeutic effect through puncture of the corpus callosum, drainage of the ventricle, lumbar puncture.

Milligan, W. DIAGNOSIS OF SEPTIC SINUS DISEASE. [British Med. J], Sept. 9, 1922, Vol. II, No. 3219, p. 459. J. A. M. A.]

The disease with which sinus thrombosis is most likely to be mistaken in Milligan's experience is typhoid. During the first week of an attack of typhoid many of the symptoms are almost identical with those of sinus thrombosis, and if by chance the patient happens at the same time to have a suppurating ear confusion becomes confounded. The presence, however, of a Widal reaction and petechiæ and the absence of very marked variations of temperature with rigors or chills are as a rule sufficiently distinctive. At times it is difficult to distinguish thrombosis from a central bronchopneumonia. The persistent cough, the rusty sputum, and the more even temperature serve, however, as useful differential diagnostic aids. From malaria it is to be distinguished by means of a blood examination and the discovery of *Plasmodium malarie*. In rare cases in infants and young children severe gastric attacks, especially if at the same time the patient has running ears, are liable to mask an existing thrombosis and to confuse diagnosis. Typical cases present no great difficulty in diagnosis, but atypical and latent cases present extremely complex problems. Milligan has no hesitation in

performing an exploratory operation in exposing or actually slitting up the sinus purely and solely for diagnosis purposes.

Pereyra, E. Portu. PURPURA WITH VENTRICULAR HEMORRHAGE. [Arch. Lat. Amer. de Ped., XVI, Sept., No. 9.]

This anomalous history is of a boy of thirteen, who was not very sick, apparently from a two weeks' attack of purpura (Werhof's syndrome). He then had a fatal ventricular hemorrhage. The author's search of the literature reveals three cases of meningeal hemorrhage in the course of purpura in recent years. In two of these the symptoms were marked, but in one other they resembled those of the case recorded.

East, C. F. T. CEREBRAL HAEMORRHAGE IN THE NEWBORN CHILD. [Brit. Jl. Child Diseases, XIX, 189.]

The baby, a boy, seemed absolutely normal at birth, with the exception of two small bluish marks on the left shin. Labor was short and easy. There was nothing of note in the family history; the mother was healthy, had had one child three years before. Her Wassermann reaction was negative. Everything went well until about sixteen hours after the birth of the child, when the baby seemed to be taking the breast badly. It had scratched its face, and the small abrasion bled very freely for some hours. About twenty-four hours after birth it became very ill and refused the breast; blood-stained froth came up into its throat. There were no fits or convulsions, but after a time the respirations became gasping and there was twitching of the arms and legs. When seen shortly afterwards, about thirty-six hours after birth, it lay limp and white, drawing a few gasping breaths at long intervals. The temperature was 96° F and the pulse 164 at the apex. The fontanelle was bulging and the whole skull was remarkably tense showing a very high degree of intracranial pressure. The pharynx was full of blood-stained froth and blood was oozing from the navel just below the junction of the cord with the body. There were a few petechiæ and some purpuric spots about 4 m.m. in diameter on both shins and also on the backs of the arms and shoulders. Ophthalmoscopic examination showed that the retinæ were covered with hemorrhages. Unfortunately the baby died before any steps could be taken to deal with the condition or investigate the blood.

Autopsy—There were patches of purpura and petechial hemorrhages as described above. Under the visceral pleura were scattered hemorrhages which extended into the lung tissue. Microscopical section showed that the alveoli here were well expanded and full of blood. Petechiæ were seen under the visceral pericardium. All the abdominal organs were normal. The caput succedaneum was not abnormally large. There had been some bleeding under the pericranium of both parietal bones. The whole of the brain was covered with blood clots, which extended round the base into the spinal canal. There was no bleeding into the

brain itself or into the ventricles. No source of the blood could be demonstrated, which would appear to have been a general capillary oozing.

Remarks—Cerebral hemorrhage in the newborn may be directly due to trauma. Such lesions may occur as tearing of the tentorium cerebelli, and would appear to be much more frequent than one would have thought. Forceps may be the cause, or merely the strain of birth. The far-reaching effects of birth injuries were described by Little in 1861, and Sarah McNutt pointed out that hemorrhage was the important factor. In the case described above such generalized hemorrhages cannot have been due to trauma as the sole factor. It is true that retinal hemorrhages have been described by several observers; Koenigstein found them in 10 per cent of cases, Schlich in 30 per cent and Sicherer in 20 per cent. The last maintains that they have no relation to hemorrhagic disease, and are purely traumatic in origin, with which conclusion von Reuss agrees. The pathology of this disease is very obscure. Hemorrhages may occur into any organs. Spontaneous meningeal bleeding seems rare according to Townsend and Green and Swift. Umbilical hemorrhage is common (Tuley), and also skin purpura (Abt). One may well compare this condition with purpura in older children. Here we know that the viscosity of the blood is diminished, and that the blood platelet count is lower than normal. In some cases the coagulation time is increased, but this is not always the case; even if it were it would be difficult to see how this could have any influence on the onset of hemorrhage. In purpura the very slightest trauma will cause effusion of blood out of all proportion to the force used, where normally there would be none and often it will appear to be spontaneous. There may be also an altered condition of the capillary walls which is also a factor, rendering them more permeable. Such conditions may well underlie the hemorrhagic disease of the newborn. Hemophilia will not satisfactorily fit in. Many babies survive the first illness and later show no hemorrhagic tendency; Larrabee has described such a hemophilic factor where there was a marked family history. The cause of any such blood or vessel changes is quite obscure. Congenital syphilis is held to have an influence in some cases, but as long ago as 1785 Vigo wrote, "If you see a disease which does not answer to the ordinary remedies you should think that it may be the French disease." It is known that purpura is caused by definite poisons or microbic toxins in some cases. The occurrence of hemorrhages in the newborn always in the first few days of life suggests that the sudden invasion of the body by bacteria and the release of toxins may be the cause. Perhaps as a subsidiary factor there is some congenital deficiency in the blood. The treatment must be prompt. In some cases, especially of intracranial bleeding, the diagnosis is not easy. Spasms of the limbs, convulsions, tenseness of the fontanelle, signs in the cranial nerves, and finally lumbar puncture are of value. The

last may have valuable therapeutic effect (Kaiser). Cushing has recommended operation where the cerebral hemorrhage is diagnosed early. Subcutaneous serum injections have been very effective and gelatine by the mouth is most useful in bleeding from the bowel. [Author's abstract.]

11. NEUROSYPHILIS.

Lakaye, R. TREPONEMA PALLIDUM IN SPERM. [Archives Médicales Belges, Vol. LXXV, No. 4, p. 385.]

Some four years ago this observer began to study the problem of transmission of spirochetes through the sperm. Pinard and Hoch reported having found *Treponema pallidum* in three of eleven specimens of human sperm some months later. Lakaye also found them shortly thereafter. In addition to his microscopic research, Lakaye inoculated the anterior chamber of the rabbit eye with human sperm, obtained by massaging the seminal vesicles after injecting 200 c.c. of physiologic saline into the bladder. *Treponema pallidum* was found in five to twenty-two specimens. Of the twenty-two inoculation experiments, a positive result was obtained in nine and negative results in ten. Spirochete was refound in only two instances.

Hearn, R. TREATMENT OF NEUROSYPHILIS. [Brit. Med. Jour., July 8, 1922, p. 37.]

This clinical report analyzes one hundred cases of neurosyphilis. So far as etiology is concerned, Hearn says, that neurosyphilis is more frequent following the papulo-erosive type of chancre. Sixty-four of his cases showed no scar; thirty-three showed the slight and invisible type of scar indicative of a papulo-erosive chancre; two showed typical scars of papulo-ulcerative chancre. In one case the original sore was a primary granulating chancre. He thinks that the smaller and the more transient the original sore, the more likely is the patient to develop a nervous manifestation in later years. Seventeen cases were of the meningeal, interstitial, or late secondary type, and of these two were definite "neuropsychoses" following the use of arsphenamin. Treatment was efficacious in all his cases. Patients who complained of tinnitus aurium never lost this distressing symptom. Degenerative or parenchymatous cases were materially benefited by treatment, so far as subjective symptoms were concerned. Eighty-three cases were treated, but in no instance was it found possible to bring about any alteration in the physical signs, or to effect any permanent improvement in the pathologic picture presented by the c.s.f. The condition of the cerebrospinal fluid was found to be of no value in deciding whether a patient suffering from degenerative neurosyphilis should be treated. In contradiction to the generally accepted view, he says, that paretics were improved, and the onset of a psychosis postponed, provided that they were brought under

treatment before they had become obviously stupid and fatuous. On the whole a noncritical presentation.

Bouman, L. CONGENITAL LUES AND PSEUDO-PARALYSIS. [*Nederlandsch Tijdschr. voor Geneeskunde*, LXVI, Aug. 5, p. 638.]

Bouman reports a case of congenital syphilis and pseudoparalysis. A few years ago he showed a case of tabes on a congenital luetic basis with the characteristic "granite" fundus. In the present case there is an anterior chorioretinitis. Patient is a married woman of thirty-two, without children. Before her marriage she had a miscarriage. For some months she has been irritable and forgetful, has neglected her household and has complained of violent headaches, sometimes accompanied by vomiting. In addition to her chorioretinitis she has slight limitation of her visual fields, while the optic disc looks greyish-red and has a badly defined margin pointing to a slight atrophy. The four reactions are strongly positive. Psychically, she shows a great disturbance of memory fixation. But the other characteristic signs of paralytic dementia are entirely lacking. There are no definite character changes and no speech disturbances. The case is thus one of a lacunar dementia. It can serve as a support of Nonne's proposition that on the basis of congenital lues all possible varieties of luetic and paralytic processes of the central nervous system can occur. [Leonard J. Kidd, London, England.]

Marie, Bouttier and Iorgoulesco. BENZOIN TEST IN NEUROSYPHILIS. [*Ann. d. Méd.*, XII, Oct., No. 4.]

The benzoïn test of Guillain and Leriche in the hands of these investigators gives excellent results. About one hundred and five cases are here reported. The flaking was distinct and durable when the spinal fluid had been derived from a case of neurosyphilis, tabes or paresis (with the exception of three in the five cases of tabes), while the response was constantly negative in the four cases of brain tumor, twelve of epidemic encephalitis, six of epilepsy and fifty-six of neuralgia, headache, etc., in nonsyphilitics. The simplicity and reliability of the method is greatly in its favor.

Block, B. TREATMENT OF SYPHILIS WITH BISMUTH PREPARATIONS. [*Klinische Wochenschrift*, Vol. 1, Sept. 16, p. 1883. B. M. J.]

B. Block gives his experience of the effects of bismuth preparations in the treatment of syphilis. The value of this drug was shown, clinically and experimentally, by Sazerac and Levaditi in 1921. Most cases have been treated by intramuscular injections of insoluble bismuth preparations. The author considers the best preparation is the combination of bismuth, sodium and potassium tartrate, known as "Trépol" (especially the recent preparation known as "Trépol indolore"). Intragluteal injections are given twice a week—1 to 2 c.c. of the 10 per

cent emulsion. For an adult a course of fifteen injections is required. In all three stages of syphilis bismuth injections produce a marked beneficial effect. The author's experience has been similar to that of most French observers. He concludes that we possess in bismuth a remedy which undoubtedly has a very powerful action in destroying the spirochetes. Clinically and bacteriologically the good effects closely approach those obtained by salvarsan, if they do not equal them, and in this respect it is certainly superior to mercury. But, as regards its influence on the Wassermann reaction, it does not equal salvarsan. Toxic symptoms resembling those caused by mercury may occur. The most frequent are a bismuth line on the gums, resembling the lead line on the gums in lead poisoning, and bismuth stomatitis, which may lead to ulcerations. The bismuth stomatitis is a milder affection than mercurial stomatitis. Occasionally slight albuminuria occurs. What place bismuth will take in the therapeutics of syphilis cannot be definitely stated at present, but it is certainly a welcome remedy in cases in which there is intolerance to mercury and salvarsan and in the rare cases in which the mercurial and salvarsan treatment fail. There are no grounds for thinking that bismuth will replace salvarsan, but the author's impression is that bismuth is superior to mercury, and therefore, in the future, in the conjoint treatment of syphilis the mercurial preparations will be partly or completely supplanted. Recently the author has commenced a combined salvarsan-bismuth treatment, and the results are said to be excellent.

III. SYMBOLIC NEUROLOGY.

1. PSYCHONEUROSES; PSYCHOLOGY; PSYCHOANALYSIS:

Moos, E. CAUSAL PSYCHOTHERAPY IN ASTHMA. [Münch. med. Woch., Vol. LXX, June 22.]

A clinical study of seven cases which sustain the conclusion that psychoanalysis may succeed in curing asthma after failure of all other measures.

Gordon, R. G., and Carleton, H. H. HYSTERICAL PAIN. [Brain, July, Vol. XLVI.]

This paper defines hysterical pain as a release phenomenon in which, owing to functional dissociation of cortical control, the more primitive sensory system convergent upon the optic thalamus is unmasked and holds sway. Its etiology and nature have received singularly little attention either from writers on pain in general or on hysteria, yet there is no symptom so commonly complained of or so greatly considered by the patient. Hysterical headache has no pathognomonic features, but it is generally affective in character and vaguely localized, its severity depends on the attention it claims and bears no relation to the intensity of the

stimulus, if indeed any stimulus can be found. In diagnosis the process of exclusion and considerations of probability must be employed. Similarly in hysterical pain in relation to scars and likewise to visceral disturbance, diagnosis can only be established by a process of exclusion. While an examination for an organic cause should be thorough it should be carried out with consonant rapidity and with the greatest care to avoid suggestion; for otherwise not only may an hysterical symptom be perpetuated, but the subjective affective element in the pain may be increased. The search for hysterical stigmata, as they were outlined by Janet and older students, is hocus pocus.

Stern-Piper, L. KRETSCHMER'S PSYCHOPHYSICAL TYPES. [Arch. f. Psych. u. Nervenkrh., Vol. LXXVII, No. 5.]

The author thinks that racial forms may lie at the basis of Kretschmer's types according to their physical structure, the finer types of the Nordic race for the asthenic type, that of homo alpinus for the pyknic type. The athletic type rests not upon one race alone apparently but there seems to exist a relationship to the stronger representatives of the Nordic race as well as of the Dinaric race. It seems to be possible also to speak of the psychophysical types as race forms since parallel to the physical structure there are the cyclothymic and schizothymic characteristics, as Kretschmer has defined these as normal psychic group characteristics from the cycloid and schizoid character, and these show many points of contact with the psychic character of the Alpine and the Nordic race.

Kahn, P. HYSTERIA. [Bul. Méd., Vol. XXXVII, March 24-April 7.]

Hysteria is here defined as a psychopathy characterized by three kinds of functional disturbances: morbid suggestibility; hyperemotivity linked to excessive excitability of the sympathetic nervous system, rendering possible organic trophic lesions as a consequence of emotional trauma, and an instinctive preferring of imagined lies to true facts. [Not a very penetrating study.]

Eisler, M. J. PLEASURE IN SLEEP AND DISTURBED CAPACITY TO SLEEP. [Int. Jl. Psa., Vol. III, No. 1.]

A hidden and unconfessed perplexity is everywhere discernable when one would attempt to discuss the problems of sleep. Descriptively we have much, dynamically little. When psa. would turn to the problem, for it is particularly interested in certain phases of the sleep phenomenon, its explanations as yet are very tentative. The author first quotes Ferenczi's abstraction that the sleep of the new born babe is an hallucinatory effort to get back to where it came from. Freud has elaborated the conception. Sleep is a somatic reactivation of the sojourn in the womb. All libido is drawn into the ego. Libido- and ego-interests dwell together in their primal state. Eisler says he will not go further, believing that Freud's statement is quite adequate.

His own contribution would limit itself to clinical experience which he says tends to corroborate Freud's speculation. In the early gratification of oral eroticism, whether with or without food, sleep states are engendered. This organization of the two states may show in pathological intensity. The author's first case is a bright vivacious girl of eighteen who developed an acute neurosis after going on an excursion. At the prospect of going into company she would have spasms of the throat. This difficulty she hid from observation as far as possible. Later she conceived the idea she should not marry. She partly rationalized this behind the idea that due to her father's influential position and means the husband would be more attracted to those than to herself. She finally elaborated a small ceremonial when it was imperative for her to attend a gathering. She would unobserved swallow a small piece of dry bread. This was not always successful. This conversion symptom had a wealth of affect on analysis—as is usual Eisler states in monosymptomatic hysterias. The malady had its initiative in a "prophecy." Her aunt caught her at onanism when a little girl and censured her for it. "If you do this again you will get sick when you are a big girl." She became a big girl when her sister married. The aunt was right. She should not marry like her sister. The analysis also revealed the castration threat with a repressed masculine complex. The masturbation had continued, and homoerotic experience with a governess had followed. She had shared vicariously the excitements of a long betrothal of a cousin. At the cousin's marriage the repression of all of this material broke through and was determined as to its localization by the oral erotic libido. With the regression to the oral erotic phase, a remarkable sleep behavior developed. She had always been a great sleeper, and now began to enjoy it in a symptomatic form. First she must lie flat on her stomach all covered up as a preliminary. She then would automatically carry out one or more of three sleep activities. She would slip off her nightdress; she would get out of bed and urinate without waking and she would drink a glass of water without knocking it or spilling it. The author now allies these sleep activities to Freud's regression to the womb abstraction. She undresses, *i.e.*, is naked, she urinates in the amniotic fluid, she swallows as in the uterus. Eisler then assumes a pre-oral erotic phase, the lethargic apnoeic; the oral erotic phase is a subsequent emergent. This patient, in her neurosis, regresses to the oral phases, in her sleep ritual to the apnoeic phase. The "40" day sleepers—Charcot's hysterical sleep illness—show this latter phase in its purest form.

A second case of an amazing disturbance of the inability to sleep which contributed to a fatal result is further contributed by the author. She was not analyzed but he had known her closely for fifteen years. Neurotic difficulties in her education were present in childhood. Autoerotic tendencies were marked in the latent period. Infantile aggressive tendencies were evident in her precocity and when grown up she was excessively courted and was almost helpless against praise. She was

therefore supposed to be very sensual and in need of watching, but in reality she was quite circumspect. She loved to be in the limelight and talked about her activities. When married she was frigid. She was fond of her husband but averse to intercourse. She became restless, hypochondriacal and anxious. Frequent indisposition was her revenge mechanism to the husband for her disappointment. Pregnancy seemed a way out. She was quite interested but developed new symptoms. Nausea now was added as an increase of the cohabitation repugnance, and the unconscious revenge motive took the feelings of hostile thoughts regarding the child and the outbreak of an acute illness. The fetus died following her great anxiety and despondency. Delay in removing the placenta brought about hemolytic icterus and following the operation a complete loss of psychical resistance. Items were neurotically dealt with. Gynecological examination threw her into a delirium almost. Careful diet needs caused loss of appetite. Vomiting would overcome successful attempts at feeding. Excessive uterine hemorrhages now developed, as a further expression of the anxiety regarding cohabitation. The vomiting, the tension and the exhaustion did not permit the bleeding to stop. Complete insomnia as a resistance to regression to her oral eroticism now became an alarming condition. In a state of cloudy consciousness she suicided by burning.

The author reconstructs the whole story in terms of the organization phases of the oral eroticism. The more active an individual has been in his oral phase, and the more energetically this stage of development has been later repressed, the greater is the chance that his ability to sleep will be affected by a pathological regression of the libido. The oral libido requires a high counter-charge which is in certain circumstances apt to remove the general wish-to-sleep of the ego (drawing in of the libido). Abraham's study of the oral-eroticism tends to support the author's conceptions. Eisler gives further illustrative material in which the oral organization played a determining rôle in the sleep disturbance. He closes with some striking comments on the relation of breathing to consciousness, and the great importance of this lethargic or apnoeic phase of pregenital pre-oral eroticism. J.

Alexander, F. THE CASTRATION COMPLEX. [Int. Jl. Ps., Vol. IV, Nos. 1, 2.]

In analytic therapy it is well known that new transitory symptoms often arise. These like laboratory experiments offer favorable opportunities to gain light upon the dynamics of symptom formation in general. Ferenczi referred these new symptoms to resistances to uncovering repressed material which the analytic therapy was threatening to reveal and the which, being driven from old combination, like a "puss in the corner play," sought to get to another state of equilibrium. The analysis of the "neurotic character" individual offers many chances for the study of this new type of formation. These impulsive, compulsive, temperamental,

flighty people, who while not tagable with a diagnosis, make all kinds of blunders in living. Their life, so to speak, is their neurosis. In the neurotic per se the symptoms are more of a Sinbad's load which in the carrying preserves the personality from the harmful trends which freedom from repression of the unconscious material would entail. The neurotic and psychotic symptoms have teleological value. Even the paranoiac's system corresponds to a healing with disablement. [See related view developed by Jelliffe in a Study of the Origin, Development and Transformation Trends of the Paranoia Concept, in *N. Y. Med. Jl.*, April 5, 1923.]

In many neuroses such a stable system is not reached—phobias, obsessions augment and life may become intolerable. The neurotic character however, stopping short of symptom formation, finds outlets in a vast variety of unreasonable activities, only partly influenced by consciousness and using no one of the neurotic mechanisms per se. The libido gets over even if many others are bowled over—thus the illness may be avoided. A certain section, certain impulse ridden criminal types [within as well as without the law] suffer from a deficiency of these defense reactions. Others, quite as definitely, are driven to injure themselves perpetually and thus avoid the neurosis because through the senseless self-injuries they replace the symbolic overcompensations (self-punishments) of the obsessional by real ones, and in this way keep their oversensitive consciences clear. If they cannot get what they are after they develop a neurosis. Analytic experience shows this. The usual fate of this type is suicide. The unconscious remains victorious in spite of all that one can do. Every neurotic character contains within it the germ of a particular type of neurosis which must break out if any deprivation of the satisfaction in reality of the neurotic tendency ensues. [How many steady citizens having accumulated their "pile" after a long life of compulsive activities develop definite neuroses when they retire.] The curtailment may result from external or from internal events. The latter mode not infrequently is seen in an analytic treatment. The previously enjoyed experiences are renounced when the meaning becomes conscious; now the transitory symptoms (latent neurosis) arises. Its severity will depend on the latent factors and viewed in the light of the transference resistance situation—"a new revised edition of an old disease"—it represents a last (or renewed) attempt of the repressed tendencies to find a discharge in the form of action. Dynamically considered, every "transitory symptom" is merely an expression of the fact that a neurotic attachment has been loosened so quickly that it is not possible for the cathexis which has been set free to work itself out in transference manifestations; that is, by resolving the symptoms one takes from the patient more satisfaction than can at the moment be made good to him in the transference or still less in reality. In treating abnormal characters we destroy, not symptoms, but real or almost real satisfactions; the tension

caused by the difference between the real satisfaction and the transference satisfaction is too great, and so there arise transitory symptoms, or even a transitory neurosis, as by-products or also as transition stages.

Alexander very ingeniously illustrates these principles in analytic work and first calls attention to character formation trends and specially what influence the castration complex has upon character formation. Character traits he first describes as certain stereotyped attitudes in life. Neurotic characters are those who show such throughout their lives, at the most decisive moments, and most important turning points. Such stereotypies may be regarded in the light of efforts at solving a conflict which has arisen on the basis of some insuperable experience. The analytic readjustment comes about in the realigning this old experience which is being compulsively reiterated in some symbolic form.

In an analysis presented Alexander cleverly outlines transitory replacement of such impulse ridden conduct by conversion-hysterical and paranoid symptoms. Some time was taken in dispersing the amnesia covering the first six or seven years of the patient's life. Thus was disclosed the chief outlines of the impulse-ridden system which gave the coloring to his entire character. Marital difficulties was the primary reason for consultation. He began to feel that his wife had married him solely for money. He treated her, unconsciously, as a prostitute—loaded her with presents, and demanded only intercourse, which she, sexually frigid, only granted through the satisfaction of her anal erotic regression—*i.e.*, hats and clothes and other signs of wealth exhibitionisms. This tendency to debase the female object—that gives a woman money—not love, making a prostitute of her, thus splitting the mother imago—in this case its superior attitude, the wife being a superior person socially and intellectually—plays a rôle in his fixation upon her, for it prevented his libido regressing to the same anal erotic level as that of the wife's—and it was forced to expression through social contacts—business—and thus took on the features of a disguised (sublimated) homosexuality. The fate of this split off remnant of the homosexually operating libido came first into the analytic field. His marital difficulties began to be pronounced as the economic upheaval of the Great War impinged upon his social activities. His fortune, which had been considerable, dwindled, and he was reduced to inactivity. The dammed up libido now sought new outlets. His anal erotic component was bearing its full load and new directions were imperative; real affection was apparently blocked. Now either the "latent neurosis" always just under cover in the "normal" life of a busy man, must come through with a manifest neurosis, or a new love relationship at genital levels must take the pressure from the lower level cravings. This latter alternative had been tried but he could not leave his wife; the reason has been already glimpsed in the edipus situation, since his mother fixation prevented him from finding a sublimation at genital levels, no matter where he turned

to find love. Analysis must enlarge the love possibilities of the individuals if they are to find satisfactory libido expressions.

The patient was forty at this time, it was hard to begin all over, even if it had not been seen how all his life he had hindered healthy sublimations, injured himself, rendered much of his energy sterile. These hampering self-injuries showed up as a form of stereotyped, behavioristic, impulse ridden pattern which the author aptly designates as passive kleptomania. His friendships were always instinctively chosen to satisfy this character trait pattern. Friendship and business were closely interwoven and these friends always betrayed him. He more than less insisted on being robbed. Analysis unrolled a long list of such transactions. He called it "fate" and never learned anything from his experiences. His own meticulous overconscientiousness and honorableness, to which in large part his monetary success had been due, was markedly overcompensatory. The early amnesic material showed it to be conditioned as a castration wish in which money-feces-penis was the unconscious formula. His whole career was one of intense devotion (father-son) to the interests of his employers. He slaved for their interests and raised himself to fortune and position, but every new money conquest gave rise to a guilty sensation, which was relieved—unconsciously—by harder work and by losing a part of the money through the passive kleptomantic events. As an anal erotic overcompensation this aspect is well documented in analysis, but here the author would connote it more closely with the Œdipus complex and show the interior mechanistic working out of a castration complex. His "parasites" transference situation were not haphazardly chosen. They always could be recognized as superior—father-substitute.

Freud has shown that fecal loss may be regarded as an early narcissistic wound, hence may serve as a prototype of castration. The oral nipple loss (Stärcke), well recognized, here has a homolog in primal anal castration (Freud). Early, through nursery training, this fecal loss is compensated for through love tokens. Then the mother situation in the Œdipus complex—incest barrier—introduces, as conscience, an inhibitory factor in the ego system. Early onanistic phantasies emphasize this inhibition and the resultant ego-ideal is introjected to the father, and the castration fear is expected at his hands. Later developments of the father are the leader and finally the community. The energy of the libido seeking the regressive mother is deflected towards the ego-ideal, identified with father and later community ideals build up later ego structures. These considerations the author states enable one to trace the narcissistically valuable substance, money, as replacing the penis in the castration wish. Thus the patient gave up his money to the superior objects and later with the communistic upheaval he neglected to protect his own fortune as he had done for the fortunes of many of his friends. Even the few personal valuables he saved were stolen

from him by a friend. A striking overcompensation was also present in his special acuity in detecting frauds carried out against his employers. Thus when but twenty he ferreted out an embezzlement of a fellow employee; when a bribe was offered to compound the felony he denounced the rascal, but following this he had a gastric neurosis for a year. He could not eat solid food. Analytic revival was followed by a diarrhea. Globus also recurred as it had occurred at the time. The analysis of these "transitory symptoms" picked up still earlier material, namely, school-boy (nine to ten) stealing activities—pencils, pens and money. He particularly craved a school bag of one of two clever boy mates, both of whom he envied, and who were the only ones from whom he stole.

The author here digresses a bit and points to certain differences in some male and some female kleptomaniac mechanisms. These latter steal without object transference. The patient stole out of envy of the clever boys—the bigger penis; the women envy the organ itself. Other determiners are undoubtedly present.

To revert to the patient, earlier stealing episodes were uncovered. At five he stole money from his father's pockets. His later unsuccessful repression of the asocial impulse became overcompensatory projection of the other fellow's dishonesty. He resisted with great conflict the many opportunities for bribery and despatched his inner enemy by his struggles with dishonest customers. Thus his ego-ideal identified himself with head of firm (father), the to-be-repressed component, crooked customers. Thus through projection and identification both trends were fairly well dealt with. This worked until the embezzlement situation. He delivered the thief, but the entire gastrointestinal canal carried the converted libido. Solid food was an oral representation of the castration wishes; diarrhea prevented a hard (penis) stool. The globus-swallowing the penis. All of these symptoms, as said, recurred in the analysis, when he was about to realize the mechanism of his financial castration, for he then found that he even then was following the stereotyped pattern and his entire finances were again in jeopardy. He now suddenly became suspicious, demanded balance sheets. Thus the paranoid state followed on the analytic dispersal of the hypochondriacal syndrome which had arisen in the analysis out of the character trait insight. Further analysis now of the "new edition" revealed determiners for this paranoid projection. When six his father died. He revived the memory of great feeling as he kissed him and threw himself sobbing on the dead body crying "I will do everything I can to make up for all that I have done against you." The abreaction even was accompanied by an hallucinatory revival of his father's face. The old pattern now seems to resolve itself into the compulsion to pay back the pennies he had taken from his father's vest to any and every father-substitute who crossed his path in life. His character regression became worse—he almost

became a paranoiac—made scenes, suspected being on the Bolshevik's blacklist, a selected victim of a world revolution. He had become aware of the passive change from the active aggression, but as this still remained unanalyzed the anxiety which had been in equilibrium because "he had paid to be able to keep his penis," having lost this, now flowed into the persecutory channel. Further analysis (see p. 30 for very interesting details) with much disturbance got at the early constellation of the castration fear. The paranoid ideas gave way, there was no return of the conversion symptoms; his entire character, manner, expression, handwriting, gait, all modified, he started a new business and was successful. The analysis of the dreams in the final stage are too detailed to permit abstraction. The libido development of this case he sums up as follows: (1) The primary, sadistic, active heterosexual (primal crime of incest and castration wishes). (2) Following this a defense against these social impulses by transformation of them into masochistic passive homosexual and finally into (3) a defense by displacement and sublimation against the passive homosexual outlet for the libido.

The author calls attention to certain analogies here and Freud's conception of the stages of civilization and religious evolutions. The author now would consider the factors antecedent to the castration wish directed against the father [since biologically the incest wish must anticipate this latter]. These he equates somewhat as follows, the evidence offered is too detailed to reproduce. The unconscious castration=birth; incest wish=return to the womb. Certain suffocating tensions are correlated with "repetitions of the sensations during the act of birth."

3. PSYCHOSES.

Woltman, Henry W. THE MENTAL CHANGES ASSOCIATED WITH PERNICIOUS ANEMIA. [Amer. Jl. of Psych., Vol. III, No. 3.]

The author begins with a short discussion of the criteria used in the diagnosis of pernicious anemia, pointing out that achlorhydria "is not the result of the atrophy of the gastric mucous membrane, but represents a primary constitutional familial deficiency, present from infancy." The psychotic picture common to most cases of pernicious anemia is that of irritability and suspiciousness, which forms the groundwork for delusion of persecution, the content of which is usually influenced by the somatic neurologic findings. In the cases of marked mental disturbance the degree of disturbance does not parallel the change in intensity of the disease. Six typical cases are given to sixty bibliographic references.

Harnik, J. NARCISSISM IN MEN AND IN WOMEN. [Int. Jl. Ps., Vol. V, p. 66.]

At puberty the libido in women is subjected to a marked wave of repression which relates especially to the sexuality associated with the clitoris. This is a generalization which Freud has made and which has

been amply confirmed by analytical investigation. This access of repression tends to limit or entirely suppress clitoris masturbation which is not infrequent in little girls. The author would attempt to trace the new libido distribution following this repression. Freud has emphasized an intensification of narcissism as one of the commonest developments. The prepubertal girl has a definite masculine trend as shown in clitoris masturbatory activities. With puberty femaleness and "beauty" arrive with narcissistic intensification. She now offers something to attract the male and in her "charm" and "beauty" she obtains a narcissistic compensation for the loss of her repressed clitoris (penis) activity. Ferenczi has suggested that the primacy of the genital zone, also means its excitability from other erogenous zones—it is a central erotic organ. Thus it becomes intimately related to the narcissistic ego, and in dreams, folk lore, wit, and neuroses this identification is as widespread as it is striking. There is a striking contrast then between the increased onanistic activity in boys and the diminished clitoral activity in girls. The boy prizes more and more his phallus, the girl more and more her face and figure.

The author gives some examples. A: hysterical with genital anesthesia, had in former years been much taken with a "Cult of the Nude." Narcissistic exhibitionism was evidently gratified but she also frequently fell back on onanism, practised accompanied by mirror vision. She thus showed both the secondary female and primary male narcissism. B: also hysterical, always maintained a belief in her ugliness as a young girl. Photographs showed the contrary. Freckles were outstanding ugly spots. This resolved itself into a self reproach about the "ugly" habit of onanism (stains soiling oneself—self abuse). She had suppressed the onanism at puberty. Later her reproach was directed towards her ugly body. Her face was satisfactory. The key to this lay in revival of onanism after some sexual experiences. The vaginal orifice apart from the clitoris now was used and equated with "ugly body." At puberty she has displaced the pretty face to pretty body. Notions of being ugly, also present in men, are next considered by the author. C: an obsessional man with impaired potency. He thinks himself too ugly for girls to like him. Continuous struggle with onanism was combined with the popular delusion of its showing in the face. The phallus was ugly, hence the beauty of women. Thus it may be held that narcissism in men may arise somewhat similarly to the mechanism in women. This is typically seen in men who are attracted to women who fall in love with them and show them the sexual overestimation appropriate to their own narcissistic valuation of themselves. Thus the mechanisms are quite identical in the two sexes but with quantitative variations. The author goes on to give some impressions concerning the tendencies towards certain bodily characteristics. Thus in many girls who have not repressed the onanistic tendency at puberty he thinks he finds a relative failure in breast development. They retain the boyish figure characteristics and not infrequently

there are facial disfigurements real or phantasied as ugliness. Clitoris onanism repression and the development of the female charm and its narcissistic attachment go hand in hand, the author thinks, with modifications. Constitutional factors may explain certain cases better, but others certainly are better understood along the lines indicated in the paper. Genitalization and female development are thus intimately related psychogenically. The narcissistic significance of the face in this relationship has been widely recognized. (Freud, Ferenczi, Jelliffe (acne), et al.). Psychologically then female beauty is recognized as a compensation for the lost phallus. Biological equivalence is also apparent, and further mythology offers confirmatory evidence. The Three Graces are added as material. Hercules with his small penis is another example. The castration complex and physical exercise in sport are also closely related here. The author then deals with another modification in men. Under the pressure of the castration complex the whole body becomes libidinized, bodily strength and manliness ideals then offer displacements of the original narcissism of the genitals. Athletic women may show similar mechanisms. The author then goes on to discuss psychosexual conditions in the passive fetal state in their evolutionary bearing on what Ferenczi has essayed to show in his stages of development of the sense of reality. He quotes in some early postulations of S. Rado relative to intrauterine libido organization. Tactile libido was one of these prenatal organizations. Thus Harnik's patient A: had lively tactile dream symbolizations and further in compensation for vaginal anesthesia her skin embrace satisfactions were keen. (See the flapper custom of "necking" and related tactile adolescent phases.) Here one sees a genitalization of a prenatal tactile erotism. The author now takes up a problem relative to the formation of the ego-ideal in the two sexes. The ego-ideal develops as the libido is displaced more and more from the primary narcissism and becomes located upon the ideal imposed from without. Manliness and womanliness become the respective sex forms.

Kelly, O. F. ON THE SIGNIFICANCE OF CERTAIN NERVE CELL CHANGES, PROBABLY TOXIC, IN RELATION TO CLINICAL DIAGNOSIS. [Am. J. Psych., Vol. IV, No. 2.]

This paper is a comment upon a condition of the cortical ganglion cells described by Mott, as occurring with significance in dementia precox, and described by Dunlap as occurring also in control cases. The condition referred to is one in which the cell body is rounded, the cytoplasm granular and stained only in the periphery of the cell body, which appears in the stained specimen to be connected to the swollen centrally placed nucleus by only a few shreds of cytoplasm. The author finds this change with some regularity in uremic and severely toxic states of more or less chronicity as well as in some cases in which death has occurred during maniacal delirious or near delirious states and he attributes it to the

action of toxic or retained metabolic substances. Twenty cases are reported in support of this theory. (Author's abstract.)

Binswanger, L. PSYCHOANALYSIS AND CLINICAL PSYCHIATRY. [Int. Zeit. f. Ps., Vol. VII, No. 2.]

The younger Binswanger opens his discussion by citing the analogy which Freud drew between psychoanalysis and psychiatry, and histology and anatomy, implying that it is the work of psychiatry to give the description of the material and that of psychoanalysis to determine inner connections. Binswanger then endeavors to show how difficult it is for psychiatry to limit itself to the mere relation of facts as they appear on the surface, and how advantageous it is to enter the field of psychoanalysis for their explanation; psychiatry determines in a scientific manner what facts coexist from the phenomenological point of view, and psychoanalysis seeks to show how things regularly follow one another from the genetic point of view. This contrast of psychoanalysis and clinical psychiatry brings clearly before our eyes, he explains, a dilemma which confronts psychiatry to-day; it finds itself in a position where it must decide whether it is going to remain simply an applied science—an empirical conglomerate of psychopathology, neurology and biology, held together by no other bond than the practical use which may be made of it, or whether it shall become an individual science. No one will demand that psychiatry should resolve itself into psychoanalysis, but on the other hand, no harm can come to psychiatry from studying the foundations of psychoanalysis and learning the processes of this scientific system which has such close bearing on its problems. That interpretations and constructions are used by psychoanalysis is no argument against it, for they must also be used by any psychiatry worthy of the name and rejection of the system on this account is evidence of total ignorance of the purposes of science. Said Kant "Under the dominion of reason the facts furnished by our perceptions must not be a mere rhapsody; they must constitute a system, the essential purpose of which they support and further." That the psychoanalytical system should always remain as it exists to-day would not be the wish even of its creator who repeatedly emphasizes that it is still incomplete, preliminary, and tentative. A patient reaching out of thought and individual diligence in observation will still be necessary before the foundations of psychoanalysis are known in detail and the theory can be brought into satisfactory relation with the empirical material. Binswanger believes that those works which approach the subject from the side of phenomenology offer promise of best results and mentions in this connection the writings of Husserl, Jaspers, and Schilder. He says that in Schilder's work we find psychiatry and psychoanalysis, which before in all the universities except that of Zurich, were at swords' points with each other, very closely united, and we are being brought to the realization of the fact that the discipline which clinical psychiatrists (with the exception of Bleuler) rejected is now being taken up by all the younger students, who

realize what a wealth of empirical material is brought to light by psychoanalysis and how necessary this material is to psychiatry.

Coriat, I. H. PROGRESS IN PSYCHIATRY. [Boston Med. & Surg. J., Sept. 11, Vol. 190.]

In a general review, this author observes that the old descriptive psychiatry of Kraepelin is being displaced rapidly by the newer interpretative psychiatry (Bleuler) which utilizes the psychoanalytical principles of Freud, though Kraepelin's classification of clinical types has outlasted those of other writers. Coriat regards Brill's translation of Bleuler's textbook as an important advance, particularly the conception of schizophrenic negativism. Coriat adds that, according to Bleuler, the predisposing causes of negativistic phenomena may be divided into: (1) Ambitendency, which sets free with every tendency a counter-tendency. (2) Ambivalency, which gives the same idea two contrary feeling tones, investing the same thought simultaneously with both a positive and negative character. (3) The schizophrenic splitting of the psyche. (4) Confusion and imperfect logic of general schizophrenic thought, rendering theoretical and practical adaptation to reality difficult or impossible. He quotes Bleuler as stating that in the psychoanalysis of hundreds of patients of schizophrenia none was without a sexual complex, and that in the majority it was a dominant symptom. Bleuler agrees with Freud's views on sublimation and repression of the sexual instinct. Coriat continues by pointing out that Karl Wilmanns of Heidelberg recognizes the importance of Bleuler's work on dementia precox, and admits that Freud has exercised a tremendous influence and has materially contributed to modern developments, though feeling that this approach has been only partially successful in elucidating the symptomatology of schizophrenia. Coriat refers to the extensive investigation of focal infection and mental disease undertaken by Kopeloff and Kirby. These writers found that in 120 cases of various types—manic-depressive insanity, dementia precox, psychoneuroses, etc.—the focal infections were removed in 58 cases, but this did not result in a higher percentage of recoveries than in the other group of 68 cases in which the focal infections were not treated. He concludes that while it is desirable to remove focal infections in mental patients, as one would treat any other physical disorder, it has not been shown that focal infection is the etiological factor in functional psychoses.

Nunberg, H. LIBIDO CONFLICT IN A CASE OF SCHIZOPHRENIA. [Int. Zeit. f. Ps., Vol. VII, No. 3.]

In the case described the catatonic state represented the climax in the development of the disease. After the loss of the libido there was, on the one hand, an effort to regain the object and on the other an effort to attain organ satisfaction. The process developed in two parallel series—both of them reactions to the withdrawal within of the libido which by accumulation of tension in the organs and by the loss of the object which

was thus sustained gave rise to painful feelings. Both reactions pressed toward attainment of satisfaction, that is to the removal of the painful sensations. The series belong to the somatic elements, that is in the form of cravings, were elaborated intellectually with the aid of those psychic tendencies which were still preserved, these latter being directed for the most part toward the regaining of the object. The sensations and emotions perceived in parts of the patient's own body were subjected to manifold elaborations and were then taken possession of as objects of the external world. In this manner the delusional system was built up. Nunberg seeks to trace step by step the efforts of the patient to regain the object, which were successful first in phantasy and later to a certain extent in the outer world, which he was able to do more easily as the patient's conflicts were, during the whole analysis, centered about the physician, being thus comparable to the transference conflicts in the neuroses.

During his very first visit, while he was still in a state of catatonic excitement, the patient made homosexual advances to the physician, for example inviting injections and in other more or less symbolic ways, thus showing that the case was not one of those in which there is a total dissolution of the ego. The patient first reached out for the object by means of speech which was an equivalent of real love, and was not, Nunberg was convinced, merely an abreaction. Unable thus to reach his goal the patient sought organ satisfaction, manifested in anal, aggressive, and cannibalistic trends, and aided by narcissistic identifications, he developed an extreme craving for food, waited all day for his cousin or sister to bring it and then devoured it greedily. He challenged the physician to fight with him, so that he might conquer or be conquered (ambivalence). The patient smoked cigarettes which Nunberg offered him, but showed that in accepting and smoking them he was following cannibalistic trends and was symbolizing the reception of the physician's body into his own, as then it was possible to invest the object (now part of his ego) with libido. At this point of narcissistic identification the patient became more introverted and symptoms which had been present in the acute attack again came to the fore, namely, transitivity, from the loss of the boundaries of the ego; and delusions of injury, of being influenced, based on transitivity, but nevertheless indicating a restoration of the ego boundaries in that the aggressive tendencies of the patient which had been projected were received masochistically, and were at least felt as coming from without.

The patient finally arrived at a state where he identified the physician with the father, turning to him for guidance and instruction. Under this "suggestion" he made advance toward a cure by means of repression. Freud says that from the side of the ego the cause of repression is the construction of the ego-ideal. Nunberg thinks that from the standpoint of the construction of the ideal the course in this disease may be regarded

as a quest for the ego-ideal indicative of what takes place normally. He briefly traces this course: When the libido was partially lost the patient was confronted by an "object," which aroused in him a homosexual reaction. At first he sought to gain possession of it by speech and later by aggressive manifestations. But because an opposite impulse immediately arose in him he was unable to reach his goal. Finally he did gain possession of the object—by means of narcissistic identification; the object became one with him. In consequence of this identification there was, for a time, loss of the object as such, and, besides, loss of the ego-boundaries, of orientation, etc., and the choking of the libido in the organs became greater. This resulted in his placing the object at a distance, fitted out with his own aggressive and sadistic impulses, to which he now reacted in a masochistic manner, interpreting his own projections as insults and injuries directed against himself. When the organ stimulation subsided the object ceased to exist in an aggressive and sadistic form. The patient identified the physician with the father and assumed an attitude of passivity and dependence. Thus it is seen that the patient in his quest of an object arrived as far as a fixation on the father (represented by the physician). This fixation prevented an entire release of the libido but after the patient had found an object a part of this infantile narcissistic ideal was given up in the process of readjustment to the milieu and there was partial correction in the direction of reality and of entire restoration of the ego.

Delgado, H. F., et al. FILARIASIS WITH PSYCHOSIS. [Rev. Psi. Dis. Conexas, 1924.]

The patient was a Japanese, in Peru, with *Filaria bancrofti* in the blood, who had developed a manic-depressive psychosis. The authors have been impressed with the frequent mention of suicide in connection with filariasis.

Golant-Ratner. GOLD REACTION IN DEMENTIA PRECOX. [Münch. Med. Woch., Vol. 71, Aug. 15.]

Golant-Ratner observed a moderately strong colloidal gold reaction in twelve patients with dementia precox. The maximum was between 80 and 160.

Bourne, A. W. ETIOLOGY AND PROGNOSIS OF PUERPERAL INSANITY. [Jl. Obstet. & Gynec. Brit. Empire, 1924, J. A. M. A.]

Sixty-one cases of puerperal insanity were analyzed by Bourne. Uterine infection, with or without blood infection, accounted for eighteen, 27 per cent, and of these eighteen, thirteen were serious, some of them proving fatal. Of the sixty-one confinements there were nine cases of eclampsia, or 13.5 per cent. There were eight cases of difficult labor with various conditions, including severe hemorrhage, manual dilatation of the cervix and extraction with the forceps. As to the influence of an unstable

mental equilibrium and a bad family history, there were eighteen cases. Thus of all the cases more than one quarter gave signs of a predisposition to mental disease. Four of the eighteen patients were epileptic. In four there was a history of previous sojourns in an asylum, while five had suffered puerperal insanity after previous confinements, and five came of a stock in which insanity had appeared in former years.

Van Loon, F. H. LATAH IN THE MALAY RACES. [Med. v. d. Burg. Geneesk. Dienst., 1924.]

Van Loon sent a questionnaire to physicians in the Dutch East Indies to obtain data on latah, a psychoneurosis common in the Malay races. A total of 169 cases was thus compiled from the experiences of eighty-four physicians; 97 per cent of the patients were women. The onset is usually with a fright in an erotic dream, and the whole course is an affective reaction, a pathologic intensification of the normal mental qualities of the Malay races.

Josephy, H. HISTOLOGY AND TREATMENT OF DEMENTIA PRAECOX. [Deut. med. Woch., Vol. 50, Aug. 22.]

This histopathologist, who has made very extensive studies on cortical pathology, believes that dementia precox is regularly associated with changes in the cortex of the brain. In cases with marked catatonic excitement he found a destruction of the third and fifth layers. Auto-serums he believes quiet some excited patients.

Ballif, L., and Rosen, H. TONUS AMONG THE PSYCHOTIC. [C. R. Soc. Biol., Vol. 92, Aug. 12.]

This general article that makes no differentiation of psychoses but classes all types under the legal grouping "insane" tends to show that intravenous injections of 2 mg. of atropin may change a predominant vagotonic reaction into a sympathicotonic one after a few days of after some time, in a few instances of the 13 examined several months. This atropine effect had no recognizable action upon the psychosis.

Ameghino, A., and Poiré, A. TUBERCULOSIS IN MENTAL DISEASE. [Sem. Méd., Vol. XXXI, Aug. 14.]

In 57 per cent of 157 patients with various forms of mental disease these authors obtained a positive reaction to the Besredka test, although in 33 per cent in the patients tested there was nothing to indicate the presence of the tubercle bacillus [save for the general knowledge that all people harbor some tubercle bacilli].

BOOK REVIEWS

Sudhoff, Karl. *ESSAYS IN THE HISTORY OF MEDICINE.* Translated by various hands and edited with foreword and biographical sketch by Fielding H. Garrison. [Medical Life Press, New York.]

After reading Dr. Garrison's most felicitous and attractive Introduction, who could escape the charm of this series of essays. The author, Karl Sudhoff, is undoubtedly the most outstanding figure in the History of Medicine to-day. The introducer, translator, and editor of this collection of studies is a twin star.

"If the history of medicine is to-day an important and well organized branch of science, employing, as tools and adjuvants, the data of archeology, anthropology, paleopathology, comparative philology, paleography, bibliography, numismatics, the plastic and graphic arts, the history and science of religions and every phase of cultural history, it is due to the enterprising, resolute and self-helping labors of Sudhoff."

It is but a few hors d'oeuvres that Dr. Garrison has spread before us, but they are worthy of any Lucullian feast, for with that rare discrimination of a brother artist some of the choicest of Sudhoff's essays are prepared for the English reader. We wish for them a hearty and wide reception. They deserve both.

Hempelmann, Friedrich. *TIERPSYCHOLOGIE VOM STANDPUNKT DES BIOLOGEN.* [Akademische Verlagsgesellschaft, M. B. H., Leipzig.]

The author is professor of Zoölogy and of Comparative Anatomy in the University of Leipzig, and presents in this work, almost for the first time, a complete treatise upon those aspects of animal behavior that may justly be termed psychological from the Protozoa to Man.

It is not a series of anecdotes about animal behavior, such as characterized the first efforts in this direction. The time has arrived, he tells us, now that the "Sturm und Drang" period of the young science of animal psychology has passed, when a real synthesis of the sensory life of the members of the animal kingdom was possible. Recent important researches upon the differentiation of colors, the speech of the bees, and the hearing of tritons under water, as isolated examples of the type of research now being carried on, and the utilization of fruitful hypotheses such as those of the Gestalt Psychology, these are mentioned by the author as offering a justification of these newer and fruitful efforts at the understanding of the general principles that may underlie a "psychology" of all animals.

Numerous monographic presentations upon detailed aspects of this large mosaic have been published, but a synthetic work has been

needed. Whereas in lower forms one has to lean heavily upon physiology and ecology, still the author is fully aware of these difficulties and faces them clearly. He has dwelt specially with those aspects of the behavior which may be ranged under the feeling and affective life and has carried the study of such phenomena as sleep, dreams, hypnosis, suggestion and mental disease down into the animal phylum in a most attractive and comprehending manner.

He divides his work into Special and a General Section; in the former he takes up systematically the phenomena in the ascending animal phylum. Here are brought together very clearly the entire range of experimental studies from *Amoeba* to *Homo* in 450 pages.

The general section deals with the so-called faculties themselves such as the "seeing of animals," "their orientation and capacity to return home," "childhood among the animals," "play among the animals." These are illuminating and fascinating chapters. Chapter X deals with "form" grasp of animals and one section would elaborate upon the general configurational apperceptive capacity of the lower, as well as the higher animals and their "conceptional" life founded upon such relations.

A particularly delightful chapter is that dealing with the feeling life of the animal series. Their emotional reaction movements, their forms of contact (primitive speech), their ethics and even their esthetics. Equally compelling are his descriptive comments upon the analogies found in the animal kingdom to sleep, dreams, hypnotic states and even the psychoses, for lower animals, no less than man may be said to have psychoses.

The Brain as the Organ of the Psyche, the Psyche Itself are two most readable chapters, in which the author discusses in very comprehensive detail the general conception of a psychical organ per se. Finally a historical chapter and a very complete literature closes this most capable and fascinating work.

We know of nothing to which to compare it. It is very learned and very readable at the same time. He knows his animals as Brehm (1864) knew them in this great classic; he also has followed all of the minute tropistic and taxic studies of the biologists, and guides the reader through the mazes and intricacies of these adventures in a most praiseworthy manner. How the animals practice, learn, associate and feel, these are most illuminatingly set forth, and man, as an animal, phyletically recapitulating all that has gone before him can but pay homage to what his ancestors have given to him.

No intelligent searcher after knowledge can afford not to feast at this table set before him.

Schiff-Wertheimer, Suzanne. LES SYNDROMES HÉMIANOPSIQUES DANS LE RAMOLLISSEMENT CÉRÉBRAL. [Gaston Doin et Cie, Editeurs, Paris.]

Within the large category of homonymous lateral hemianopsias those due to cerebral hemorrhage make a special group. These are here made the subject of a monographic study by the authoress in

this monograph of 180 pages, illustrated by 38 text figures and two colored plates.

Largely inspired by the excellent work of Foix upon the topography of the cerebral circulation this most noteworthy study tends to show almost with a fixity as absolute as yet can be assured in neuropathology those lesions of a cerebral hemorrhage which can determine the hemianopsic syndrome. Cerebral hemorrhage is the lesion which is the most favorable for the definition of the major vascular syndromes. Homonymous hemianopsia is one of its frequent symptoms. Its study is comparatively easy and the associations which are brought about with other neurological signs are most intriguing in that the intracerebral optic pathways in their long course traverse several different vascular territories. Thus the symptomatic grouping realized is of great value to the clinician since it permits him to quite definitely localize the causal lesion and thus to envisage the clinical consequences.

The work before us is of great service. It deals first with the general circulatory topography in its relations to the optic tracts. These are well set off schematically into four main regions. The tracts, the crossing, the radiations and the terminal stations. A special chapter is devoted to the visual field findings. Then the author, after laying down these fundamentals, gives a rich collection of clinical facts based upon the arterial lesions in the posterior cerebral, the sylvian and anterior choroidal vessels, respectively. Those of the sylvian distribution are intensively dealt with, especially in their aphasic and apraxic complications. The last chapter is given over to the clinical description of a case of cortical blindness due to a disseminated intracerebral sclerosis, of vascular origin.

The volume is well presented, the bibliography excellent, for French and German workers. We miss the citation of Adolph Meyer's excellent contributions to this subject. On the whole it is a valuable contribution.

Wodak, Ernst. DER BARANYSCHES ZEIGEVERSUCH. SEINE PHYSIOLOGISCHEN GRUNDLAGEN UND KLINISCHE METHODIK. [Urban u. Schwarzenberg, Berlin u. Wien. Mk. 3.]

In recent years the author has collaborated with M. H. Fischer in Tschermak's Physiological Institute in Prague in a series of experiments upon the Barany pointing tests.

For the most part the present monograph of 80 pages would outline the more noteworthy results obtained as pertaining more particularly to the physiological foundations which underlie the pictures seen in clinical testing.

A special section deals very clearly with the practical results obtained in the clinical tests. No effort is made to follow out pathological implications.

Concerning the practical significance of the pointing tests there is little question, but the problems involved are extremely subtle and the interpretations of the clinical findings are far from reaching

clarity, conciseness and predictability. This present study is well worth reading as a useful contribution looking towards those ends.

Pascal, C., et Daverne, J. TRAITEMENT DES MALADIES MENTALES
PAR LES CHOCS. [Masson et Cie, Paris.]

In view of the almost hopeless atmosphere that gathers like a pall about an enormous group of psychotics interned for many years—Central Islip in New York State, for instance, contains some thousands of this type of chronic mental disorder—any effort that would break into this situation cannot but be welcomed, even if but offering something to try in the face of the appallingness of these chronic situations.

Certainly in the past dismemberment, dissection and mutilation have been preached in many quarters and teeth, tonsils, uterus, ovaries, colon and other structures sacrificed in the attempt to help these patients.

The suggestions presented in this book fortunately do not savor of this sadistic mode of approach. They have been trying a "shock" method—one that gets at the biochemical levels of the human organism by artificial temperature raising produced by heterogenous albumins and crystalloids.

In one respect at least the present work claims our attention. The senior author, a number of years ago, presented an extremely able study upon "dementia precox" and from time to time has given evidence of no mean psychiatric insight as well as evidencing a larger philosophical grasp of psychiatric problems.

We therefore feel assured that what she writes is worthy of some attention and in the present application of serological methods to the treatment of some of the chronic psychoses one is offered much to think about.

Even though the experimental nature of the material presented is evident, yet, as stated, our therapeutic resources have hitherto been unavailing. Here is a promise of some relief. Even if the interpretation of the good results obtained may be founded upon biochemical formulations as yet very speculative in their application to the psychical domain, a follow-up seems well worth while.

Bechterew, W. ALLGEMEINE GRUNDLAGEN DER REFLEXOLOGIE DES
MENSCHEN. Nach der dritten Auflage heraus gegeben von Prof.
Martin Pappenheim. [Franz Deuticke, Leipzig u. Wien.]

No one needs to be reminded here that the world has been plunged into a type of maniacal excitement since 1914, and only within comparatively recent years has been emerging into some form of international harmony. Nations, like organs in this larger unity, as well as in their dissociated states have gone on functioning with varying degrees of isolated autonomy. Of all of a nation's functioning capacities, those of the medical sciences have perhaps preserved a greater degree of vitality than most others, since their values to the living organism are so essential.

In many senses it is to be regretted that the Russian language offers insuperable barriers to a great number of individuals interested in medicine. For many years the French entente with Russia helped to bridge this gap since a great mass of Russian work was presented in large and important French reviews. Since 1914 this has been broken and of late the German language has been almost the only means through which Russian work in medicine, particularly in neuropsychiatry, has been available—notably the *Zentralblatt für Neurologie u. Psych.* and the *Zeitschrift f. d. g. Neur. u. Psych.*

Bechterew's celebrated work upon the physiology of the nervous system came through this source and also this most stimulating volume before us. Earlier editions have been reviewed in these columns and this the third edition is all the more welcome since it brings to us the reflections of one who has seemed to come through the "Soviet" revolution more or less unscathed. Possibly its out and out mechanistic point of view has permitted this, for here is presented a more or less rigid system of tropisms and taxes carried up from the lowest spinal reflex levels to the highest psychological patterns, constituting an "Objective Psychology" far more radical than the Behaviorists have ever dreamed of, and it may be remarked with a much more scientific background than any behaviorist has given evidence of up to the present time.

Bechterew's original work, "Objective Psychology," first appeared, in Russian, in 1907, and followed the slogan of "correlative functions" in the nervous system rather than the utilization of the concepts, "psychic," or "neuropsychic" so dear to orthodox terminologies. When the work appeared in German and French translation, the title "Reflexology" (1913) took the place of "Objective Psychology." The fundamentals of this work went back as far as 1885 to the author's original work upon the traumatic neuroses and hysteria since which time he has worked this conceptual mine right up to the present time.

What it has afforded him can be gathered from a study of this most valuable and thought-provoking work, no detailed analysis of which is possible in this place since we here have a series of 37 lectures, occupying about 400 large octavo pages in the opening pages of which the present Russian régime offers a congratulatory tribute to the author on the occasion of his celebration of 40 years of investigation of the activities of the nervous system. It is not without interest to note that in the so-called "backward Russia," that Bechterew as a disciple of Darwin and of the evolutionary theory is held in high regard. This we cannot but place in contrast with "progressive America" in its widespread anti-evolutionary stupidities in sundry sovereign states.

Schmitz, Oscar A. H. PSYCHOANALYSE UND YOGA. [Otto Reichl Verlag, Darmstadt.]

Since decade by decade the world is growing smaller and East and West are approaching each other more vitally, in spite of variant terminologies, a work such as this is of special importance.

It is doubly significant since the most fundamental postulate of western psychoanalytic thought concerns what it terms the "unconscious" and further asserts this "unconscious" to be of universal significance, and hence, reasonably, a meeting point where varying "Weltanschauungen" may find a resolution. Oriental philosophical systems have been brought to the notice of occidental students for many years. Max Müller's contributions may be mentioned as among the earlier ones of value. To the man in the street, caricatures of these have been presented by numerous fakirs, using the term in its technical as well as its vulgar sense. Yoga means, as the author states, almost the same as "know thyself" of the Delphic Oracle; but how different is the mode of approach. In a sense it may be said that psychoanalysis works from the conscious back to the primary narcissisms of autoerotic foundations; while Yoga works from the primitive libidinous activities up into the conscious recognition of their significance.

For the occidental and in psychiatric parlance failure to adapt to the situation means what in general may be termed "dementia pre-cox"; for the oriental the perversions (in the large sense) are recognized for what they are and why be so fussy about them? As in ancient Hebrew eschatology the worship of Baal and Ashtaroth was anathema, in "India" the problem of Lot was no problem, and why worry?

Exaggerations along the Hebraic-Mithraic-Christian trend lead to mysticism; Yoga is its counterfoil. Nirvana for the East—regression to the mother in the psychoanalytic West.

These and other antitheses are here most intriguingly set forth, not altogether clearly and convincingly but nevertheless, not without much ingenuity.

For the reviewer, a memory arises of his first trip to Europe—his "Wanderjahre," now some 30 years ago, when he met upon the steamer a group of the "Kundalini" cult, a bare half dozen disciples and their male and female Yogi teachers. Then, affectively repugnant, and now retrospectively known as a "pervert" combination, for which "cunnilinguis" and "fellatio" were the goals of salvation, the eastern Yogi teachings had no great justification.

Since from the standpoint of the psychoanalytic principles, these were failures in sublimation, yet possibly the individuals escaped being schizophrenics. Is there any gain? one might logically ask. For the one, a neurosis or a psychosis; for the other a criminal, according to western codes. For ourselves we prefer the neurosis or psychosis, since "genius and psychosis" are so closely, yet ambivalently expressed. These are some of the by-products which come into consciousness as one reads this interesting work. They may have little to do with the real content of this work but "mankind in the making," which constitutes the third chapter in this book, must deal with this general type of problem.

Piaget, Jean. THE LANGUAGE AND THOUGHT OF THE CHILD. [Harcourt, Brace & Company, New York.]

E. Claparède, in a short and illuminating preface to this work, states the "importance of this remarkable work deserves to be doubly emphasized, for its novelty consists both in the results obtained and in the method by which they have been reached. To this the reviewer gladly assents. He would go further and say this is a type of work which puts the quietus upon an old fashioned psychology of thinking, and in a most direct and convincing manner justifies the work and the results of the geneticist in pedagogy.

The author is a young member of the staff of the J. J. Rousseau Institute at Geneva and a professor at the University of Neuchâtel. As a boy of fifteen he not only had collected but published studies on the molluscs of the Jura of Neuchâtel; before he was twenty-one he had completed a monograph on the same, and his graduation thesis at twenty-one took up a study of the distribution of these animals in the Valaisian Alps. Since then he has been as assiduous in collecting material of a psychological character, and this work represents a report of clinical findings quite in the best of empirical methods.

It is hardly a book simply to be read: it must be carefully studied, and will well repay intense application. The neurologist can read it to advantage, especially in view of the newer studies of Head upon Aphasia. It is of particular interest to the pedagogue; to the psychiatrist it offers much of ontogenetic interest concerning autistic thinking; to the student of psychoanalysis it is particularly important as a series of behavioristic data confirmatory of their own particular method of getting at early experiences.

All in all it is well worth while and makes another important addition to that already noteworthy Library of Psychology, philosophy and Scientific Method.

Goddard, Henry Herbert. TWO SOULS IN ONE BODY. A CASE OF DUAL PERSONALITY. [Dodd, Mead and Company, New York.]

One of the profoundest asininities that lingers on in the lay as well as in the medical mind is the idea of "badness" in children as being an innate quality of their behavior. It is a survival of the old theological superstition of "original sin." In this book as in many another it is shown to be chiefly a result of the stupidity, malevolence and pettinesses of parents, teachers and elders in authority who would mould the child to the pattern of their own beloved ego.

How a child may be distorted in its development this fascinating work shows. "Polly" is a type of thousands of maladjustments through popular misconceptions of childhood. We are not much in sympathy with the title. All people have multiple personalities in the general sense, but apart from this minor nuance of opinion re titles we commend to all parents, teachers, doctors, lawyers, this excellent work; to pediatricians especially.

OBITUARY

HENRY MILLS HURD, A.M., M.D., LL.D.

INTEGER VITÆ SCLERISQUE PURUS

It was my good fortune, fifty years ago, to form the acquaintance of Dr. Henry M. Hurd, then an assistant physician at the Michigan Asylum for the Insane, now known as the Kalamazoo State Hospital, Kalamazoo, Michigan.

I had gone to a small town near Kalamazoo, with a gynecologist from Buffalo, N. Y., whose assistant I then was, to make a surgical operation.

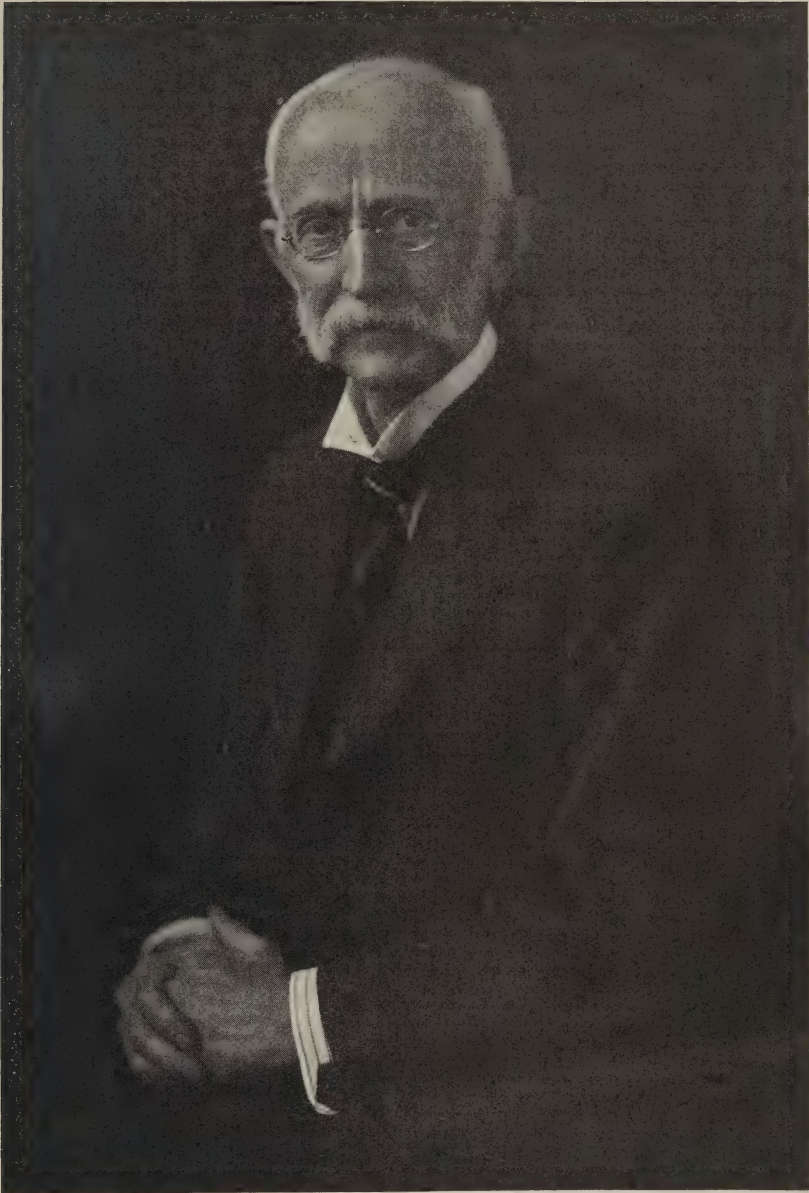
My chief was the President of the Board of Managers of what is now the Buffalo State Hospital, then in process of erection, and after the operation we visited Kalamazoo that he might see the institution and confer with its medical director, Dr. E. H. Van Deusen.

While our respective chiefs were in conference on matters of hospital construction and management, Dr. Hurd took great pains to entertain me and exhibited a characteristic which I have many times observed since in his contact with others; he made me feel that the things medical and surgical in which I was the interested were also of great interest to him. He attempted, I recall, to draw from me some opinion as to the relation of disorders of the pelvic organs in women to mental disorders, a subject just at that time beginning to loom large on the medical horizon, but about which I knew practically nothing.

The acquaintance then formed grew more intimate through Dr. Hurd's visits to the State Lunatic Asylum at Utica, N. Y., now known as the Utica State Hospital, with which I quite unexpectedly became connected as an assistant physician early in 1878.

The American Journal of Insanity, now *The American Journal of Psychiatry*, had been published at the Utica institution since 1844. Its editorial board was the medical officers of the asylum, and, when in July, 1880, Dr. Hurd offered his first contribution to its pages—"Recent Judicial Decisions in Michigan Relative to Insanity"—we had some correspondence about proof-reading, etc.

It was impossible for either of us to conceive that seventeen



Henry M. Hurd

years thereafter we would be associated in Baltimore in the editorial conduct of the same Journal.

Dr. Hurd had been connected with the hospital at Kalamazoo for eight years, when in 1878, shortly after having been made assistant superintendent of the Kalamazoo hospital, he was, at the age of thirty-five, called to the directorship of a new institution, The Eastern Michigan Asylum for the Insane at Pontiac, now the Pontiac State Hospital.

The institution was opened in August, 1878, and then began a service, the basis for which had been formed by eight years' work and training under Dr. Van Deusen, and which developed the well rounded executive who was called to the medical superintendence of the Johns Hopkins Hospital in 1889.

Dr. Hurd's work at Pontiac attracted the attention and favorable comment of his fellow workers in the same field throughout the country. He labored hard to bring about the enactment of the Michigan State Care Act, which resulted in the removal of the insane from the county almshouses to state institutions. He set about making the institution at Pontiac a hospital in function, as it afterward became in name. Increased attention to night nursing was brought about and occupation for the patients introduced. His enthusiasm for the best medical service he imparted to his medical and nursing staff, exhibiting an ability to enlist their hearty and cheerful coöperation, an ability which in later years in a larger field was employed to great advantage.

At Pontiac he began the literary activities which have been such a marked feature of his life in Baltimore. In June, 1881, he read, before what is now The American Psychiatric Association, a paper, entitled "A Plea for Systematic Therapeutical, Clinical and Statistical Study" (*Am. Jl. of Ins.*, XXXVIII, July, 1881, pp. 16-31).

In addition to his annual reports, he published, during the eleven years of his Pontiac life, fifteen papers.

Two of these I have named; among the others were: "The Treatment of Periodic Insanity" (*Am. Jl. of Ins.*, 1882-83, XXXIX, 174); "Minor Treatment of Insane Patients" (*Am. Jl. of Ins.*, 1883-84, XL, 205); "Paranoia" (*Am. Jl. of Ins.*, 1885-86, XLII, 473); "The Relation of General Paresis and Syphilitic Insanity" (*Am. Jl. of Ins.*, 1886-87, XLIII, 1); "The Data of Recovery From Insanity" (*Am. Jl. of Ins.*, 1886-87, XLIII, 243); "The Colony System of Michigan" (*Proc. Nat. Con. Char.*, Boston, 1887, XIV, 215); "Gastric, Secretory and Other Crises in Paresis"

(*Am. Jl. of Ins.*, 1887-88, XLIV, 60); "Imbecility With Insanity" (*Am. Jl. of Ins.*, 1888-89, XLV, 261).

When the Trustees of the Johns Hopkins Hospital, wisely deciding that the superintendent of the new institution should be a medical man, looked about for the best available man, the choice readily fell upon Dr. Hurd and he was invited to visit Baltimore for an interview with the Board.

The Board at Pontiac, however, had no desire to part with Dr. Hurd and one of its members came to Baltimore with him hoping to dissuade him from accepting the position. This gentleman, however, when he saw what the situation really was and the opportunities it would unfold, frankly said to Dr. Hurd, "If the position is offered to you and you do not accept it you will make the mistake of your life."

Dr. Hurd was elected Superintendent of the Johns Hopkins Hospital in June, 1889, and came to Baltimore to enter upon his work the following August.

It was as a hospital administrator that Dr. Hurd found his metier and his training had been of a kind best suited to develop an allround executive.

His work among mental cases for nineteen years had moreover been exactly the kind of vocation to broaden and refine a natural tact which he possessed to a high degree.

No man of Dr. Hurd's type could live and work among cases of mental disorder without grasping to the fullest extent the point of view of the patient as related to the hospital and hospital care. That appreciation had as its necessary corollary the view that the hospital and all of its resources were for the patient and not the patient for the hospital, and was one of the important elements which made him the great hospital administrator that he was. He did not lose sight, however, of the fact that a great hospital has a duty toward medical science and art which must be constantly in the mind of its administrator.

He had not only developed as an administrator, but, entering upon his psychiatric experience as he did at the opening of an important epoch in the development of psychiatry, he broadened and grew with this development and contributed his share thereto.

When he came to Baltimore he was prepared, therefore, not only to assume the direction of the Hospital, but also to enter with a clear understanding upon the plans and aspirations of the medical staff and to contribute by reason of his psychiatric training to the medical work of the institution.

When the medical school of the university was opened in 1893, he became the Professor of Psychiatry, which position he held until 1906, when he was made Professor Emeritus.

Dr. Hurd very wisely stipulated as a condition *sine qua non* to his acceptance of the position of Superintendent of the Johns Hopkins Hospital that he should be untrammelled in the selection of his assistants and other subordinates. Without such an arrangement he could never have been certain of the selection of the persons best suited in his opinion to carry out his ideas of hospital administration, nor could he have at all times been assured of the whole-hearted loyalty of his subordinates.

The early years at the Hospital were busy ones. President Gilman of the university had temporarily supervised the institution pending the selection of a medical superintendent and had done many things which, in some measure, made Dr. Hurd's labors easier.

The training school for nurses was opened in September, 1889, with appropriate ceremonies. Dr. Hurd made an address, taking for his subject "The Relation of the Training School for Nurses to The Johns Hopkins Hospital."

This school was specifically provided for by the founder of the Hospital. He said: "I desire you to establish in connection with the Hospital a Training School for female nurses. This provision will secure the services of women competent to care for the sick in the hospital wards, and will enable you to benefit the whole community by supplying it with a class of trained and experienced nurses."

In his address, on the opening of the school, Dr. Hurd spoke of "district nursing among the poor," a matter wholly new to Baltimore, and brought to public attention probably for the first time. District nursing is now one of the recognized charities of the city, maintained by the Community Fund.

The first number of *The Bulletin of The Johns Hopkins Hospital*, a monthly publication, appeared in December, 1889. This periodical has grown in importance and influence with the passing years and has been one of the best exponents of the medical and surgical work of the hospital. Its editorship was undertaken by Dr. Hurd, and its regular appearance and success were largely due to him. He read and revised manuscripts, corrected proof, and persistently followed up dilatory writers of papers who were tardy in sending manuscripts or returning proofs.

The Medical Reports of the Hospital, the first volume of which appeared in 1890, were also issued under Dr. Hurd's supervision and editorship until his retirement from hospital duties.

Dr. William H. Welch had organized the Johns Hopkins Hospital Medical Association, but the Journal Club, and the Historical Club were organized after Dr. Hurd came to the hospital, and in all of these he took an active part.

When I came to Maryland in the fall of 1891 to assume the duties of Physician-in-chief and Superintendent of the Sheppard Asylum, now The Sheppard and Enoch Pratt Hospital, to which I had been elected in January of that year, Dr. Hurd was practically the only physician in the state whom I knew.

I found him busily at work and with his work well organized. I naturally turned to him for counsel and assistance, and never was I denied both, and to no better source could I have gone for such clear comprehension of the problems which confronted me in the equipment and organization of a new institution.

In 1897, Dr. Hurd, Dr. G. Alder Blumer, Dr. J. Montgomery Mosher and myself were appointed the Editorial Board of *The American Journal of Insanity*, which had, in 1894, become the property of The American Medico-Psychological Association (now The American Psychiatric Association) and had been conducted by a committee composed of Dr. Edward Cowles of Boston, Dr. Henry M. Hurd of Baltimore, and Dr. Richard Dewey of Chicago. The Journal, during the period from 1894 to 1897, had been published in Chicago and edited by Dr. Dewey, who felt unable longer to continue the work. Of the new Board, Dr. Hurd naturally became Editor-in-chief, and the publication of the Journal was placed in charge of the Johns Hopkins Press.

Dr. Hurd's work on the Journal was, like everything he undertook, thoroughly carried out. He was by training and nature an ideal editor and it was with sincere regret on the part of the Association and his associates that, in 1904, he asked to be relieved from active duty on the Journal.

He never lost interest in the Journal, however, and was a tower of strength to his successor. In one of my last conversations with him I told him of the proposed change of the Journal, which, since 1921, has been known as *The American Journal of Psychiatry*, from a quarterly to a bi-monthly, and that the first number in the new order was then being put in type. He was much interested, but said—"I am afraid you will have a heavy burden"; but added—"the additional men on the Journal staff ought to be of great assistance."

It would be of interest to take in order Dr. Hurd's many and varied achievements. He never permitted his interest in medicine,

particularly in psychiatry, to be overshadowed by his work as a hospital superintendent, and one finds him from time to time contributing papers or making addresses upon questions relating to that subject. From many titles in the bibliography of Dr. Hurd, at the close of Dr. Thomas S. Cullen's little book entitled "Henry Mills Hurd, the First Superintendent of The Johns Hopkins Hospital," Baltimore: The Johns Hopkins Press, 1920, I take the following:

"Some Mental Disorders of Childhood and Youth"; "The Non-Medical Treatment of Epilepsy"; "Post Operative Insanities and Undetected Tendencies to Mental Disease"; "The Teaching of Psychiatry," being the Presidential Address before the American Medico-Psychological Association, New York, May 23, 1899; "Reception Hospitals for Cases of Acute Insanity"; "Psychiatry in the Twentieth Century"; "How Can Psychiatry Assist Preventive Medicine?"; "Three Quarters of a Century of Institutional Care of the Insane in the United States"; "Mental Cases in General Hospitals"; "Organization and Administration of Hospitals for the Insane." Many more titles might be cited.

He was always busy, but never seemed hurried. His activities were manifold, yet he somehow found time for the orderly performance of each task. In addition to his work on the *Hospital Bulletin* and the Medical Reports, his Annual Reports to the Trustees, and the *American Journal of Insanity*, he was, from 1913 to 1920, one of the Editors of *Modern Hospitals*. He was joint author with the late Dr. John S. Billings of a book entitled "Hints for Hospital Visitors," and, with him, was editor of a volume entitled "Hospitals, Dispensaries and Nursing," being papers and discussions on these topics at the International Congress of Charities, Correction and Philanthropy at Chicago in 1893. At this Congress, Dr. Hurd was Secretary of Section III, the proceedings of which constitute this volume; his contributions to the section were papers entitled "The Relation of Hospitals to Medical Education" and "A Description of The Johns Hopkins Hospital."

Dr. Hurd was most active in the American Psychiatric Association, having become a member in 1879, when it was known as The Association of Medical Superintendents of American Institutions for the Insane.

He took an active part in the reorganization of the Association in 1892, when it became The American Medico-Psychological Association and was its Secretary from that time until 1897, when he was elected Vice-President, to be followed by his election as President in 1898.

In 1908, at the meeting of the American Medico-Psychological Association in Cincinnati, a committee was appointed, of which Dr. Hurd was Chairman, to take into consideration the preparation of a history of the care of the insane in the United States and Canada. This project was first brought forward in 1898, but had slumbered for ten years. Dr. Hurd organized his committee, the fellow members of which were Drs. William F. Drewry, Richard Dewey, Charles W. Pilgrim, G. Alder Blumer and T. J. W. Burgess, and made its first report in 1910 outlining a plan of action, which was adopted and, in 1911, a systematic effort was inaugurated to obtain material for the work.

Most of the labor of organization and practically all the editorial work fell upon Dr. Hurd's shoulders. The first volume of "The Institutional Care of the Insane in the United States and Canada" appeared in 1916, a book of over 500 pages. The preparation of this volume was almost wholly the work of Dr. Hurd.

In March, 1916, Dr. Hurd gave a dinner to a group of friends at the Maryland Club in Baltimore, announcing toward its close that it was in commemoration of his graduation in medicine at the University of Michigan in 1866. Unknown to Dr. Hurd, the binding of the volume referred to had just been completed and Dr. Thomas S. Cullen had procured the first complete copy, which, to Dr. Hurd's surprise, he brought forward toward the close of the dinner. Dr. William H. Welch wrote on the flyleaf of this first volume the following, which was then signed in turn by all present and the book presented to Dr. Hurd: "March 25, 1916. We, assembled at a dinner to celebrate the fiftieth anniversary of Dr. Hurd's graduation in medicine and the publication of this work of which this the first copy, record our names in grateful remembrance and affection for the editor, colleague and friend."

The three remaining volumes were brought out in rapid succession.

In November, 1916, Dr. Hurd had the great misfortune to have a separation of the retina of the left eye. His right eye had for a long time been defective and the accident left him very seriously handicapped as far as future literary work was concerned.

He was able, however, to go about freely. He could read the headings of newspaper columns and the titles of journal articles and bravely resumed his work as soon as his medical friends would permit, with the aid of an amanuensis and reader to whom he indicated what he wished read. He was able to write in his own hand brief letters of personal correspondence, which gave no indication of his defective eyesight.

It happened that just as he suffered this calamity—for to a man

of his activity it was no less, even though he retained a fair degree of vision in the right eye—the page proof of the last volume of *The Institutional Care of the Insane* had been sent to him. When I called to see him on the day following his affliction, one of the first things he said was to ask what could be done with this proof. Needless, perhaps, to say that he was assured that it would be taken care of as well as possible under the circumstances.

This last volume was issued in 1917. The whole work comprises over 2,900 pages.

In 1911, Dr. Hurd resigned his position as Superintendent of The Johns Hopkins Hospital. He was made Secretary of the Board and almost immediately began the collection of material for a history of the hospital. This work is about two-thirds finished and can, from material on hand, be completed, it is believed.

Dr. Hurd, on coming to Maryland, entered at once upon the life and interests of the community and particularly of the city of Baltimore. He early became interested in the public care of the insane and, with others, entered vigorously upon attempt to improve the administration of the public hospitals. Bay View, the city almshouse and, particularly, its department for the insane, was a disgrace to the community, and here he was able, despite official and public apathy, to accomplish much.

There was but one state hospital, Spring Grove, though there was a crying need for more hospital room for over 1,000 insane confined in county almshouses, some in chains and all under conditions of squalor and neglect. With no uncertain voice, he denounced these conditions, only to be rebuked, as one who had too recently come to Maryland to presume to offer advice, by those who in official position or otherwise supported and were satisfied with the *status quo*. This rather amused than annoyed him and did not lessen his ardor or activity.

In 1894, a bill was passed by the state legislature establishing a second hospital, and Dr. Hurd, the late Dr. George H. Rohe, then Superintendent of the Spring Grove Hospital, and others, were appointed to select a site and prepare plans therefor. Out of this grew the admirable Springfield State Hospital at Sykesville, Maryland, of which Dr. Rohe was the first medical superintendent.

From 1908 until 1921, when he resigned, Dr. Hurd was a member of the State Lunacy Commission, in which position he rendered valuable service to the state. He was also, for several years, a Trustee of The Hospital for Consumptives of Maryland, Edgewood.

On November 1, 1906, a dinner was given to Dr. Hurd on the occasion of the presentation of his portrait to the Trustees of the

Hospital. This portrait, by Chase, shows Dr. Hurd standing clad in his academic gown. At that dinner, it was my good fortune and pleasure to be seated next to a graduate of the medical school who had already attained a high position in medicine, and who has since made many valuable contributions to the science of medicine, who holds an important teaching position. After listening to after-dinner speeches, congratulatory, laudatory or reminiscent, he turned to me and said: "No one has told, no one can properly tell, the story of Dr. Hurd's many kindnesses to the students and interns at the hospital. I was, when a student, in danger of having to discontinue my studies because of sudden financial difficulties; Dr. Hurd somehow heard of my troubles, sent for me and in the kindest and simplest way told me not to worry, he was sure there would be found a way out of the trouble, but that until that way was found he would personally supply the necessary financial assistance."

Dr. Cullen, in his little book on Dr. Hurd, relates a similar case and refers to others.

On his eightieth birthday, May 3, 1923, a dinner was given Dr. Hurd at the Maryland Club, Baltimore, which was attended by a large number of his friends and associates happy to show their affection for him. The President of the University, the Presidents of the Boards of the University and of the Hospital, past and present members of the staff, were among the guests. The few speeches which were made were with one accord words of admiration for work accomplished and of affection for the guest of honor. Among the letters and telegrams which were read was a cablegram from Lady Osler, between whose husband and Dr. Hurd there had been strong bonds of understanding and sincere regard.

Dr. Hurd was decidedly in physical make-up a spare man. I doubt if he ever weighed as much as a hundred and twenty pounds, yet he was a man of great energy. He had none of the irritability which sometimes accompanies energy and not seldom handicaps it, nor was he impatient with those who differed from him.

One might quote concerning him, Clarendon's estimate of Hampden, cited by Macaulay in his review of Nugent's *Memorials of Hampden*: "He was of that rare affability and temper in debate and that seeming humility and submission of judgment, as if he brought no opinion of his own with him, but a desire of information and instruction. Yet he had so subtle a way of interrogating, and, under cover of doubts, insinuating his objections, that he infused his own opinions into those from whom he pretended to learn and receive them."

There is but one objection to the above as applied to Dr. Hurd, he never "pretended." He never gave his associates the feeling that he was intolerant of or minimized the value of their suggestions. He listened patiently, quietly expressed his own views and when the responsibility for decision or action rested upon him, cheerfully accepted that responsibility.

He possessed in a large degree the saving grace of humor and, like Lincoln, was ready with a wealth of anecdote or incident to illustrate a statement or point a moral.

He never seemed aware of how much he accomplished or in how many varied ways.

Once, when I protested against his assuming so much work and doing so much for his friends, he smilingly replied: "If I have done anything I have enjoyed doing it." And that was the mark and characteristic of the man; he enjoyed accomplishing things, enjoyed serving his friends.

He illustrated perfectly the lines I had the pleasure of applying to him in 1904 at a dinner to the late Dr. John B. Chapin in Philadelphia, when I introduced him as the one selected to present the portrait of Dr. Chapin on behalf of his many friends:

"So, if I live or die to serve my friend,
'Tis for my love,—'tis for my friend alone,
And not for any rate that friendship bears
In heaven or on earth."

Dr. Hurd was born in Union City, Michigan, May 3, 1843. He was the son of Dr. Theodore C. and Eleanor Eunice (Hammond) Hurd. He received the degree of A.B. in 1863 at the University of Michigan, Ann Arbor; M.D. in 1866; A.M. in 1870; and LL.D. in 1895, all at the same University.

In 1874, he was married to Mary Doolittle of Utica, N. Y. There were three children, Charles, Eleanor and Anna. Mrs. Hurd died in March 1913; the son in childhood of diphtheria. His two daughters survive him. Dr. Hurd early became connected with the Presbyterian Church and remained to the end a consistent member.

He died at Ventnor City, N. J., where he had gone with his daughters to spend the summer, on July 18, 1927, after a brief illness, of pneumonia.

Thus passed from life a friend and associate of many years. To him and his memory, I may truthfully quote Bassanio's description of Antonio:

"The dearest friend to me, the kindest man,
The best condition'd and unwearied'st spirit,
In doing courtesies."

EDWARD N. BRUSH

VINCENT GILIBERTI

Doctor Vincent Giliberti, born September 28, 1889, educated in public and high schools of this city and in City College, New York



VINCENT GILIBERTI, M.D.

City. Received his medical degree at the College of Physicians and Surgeons, Columbia University, 1913. Was born in Guardia Perticara, Potenza, Italy. Died August 6, 1927, of nephritis. He

is survived by a wife, Mrs. Nellie Giliberti, a brother who is also a physician, and a sister.

Dr. Giliberti was an Associate in the Department of Neurology at the Post Graduate Medical School and an Associate Attending in the hospital. He was Clinical Assistant at the Vanderbilt Clinic. He engaged in the general practice of medicine until five years ago when he began to devote himself exclusively to nervous and mental diseases.

In the short period of five years Dr. Giliberti's abilities made it possible for him to assume a place in neurology in this city that was becoming increasingly important. He had an intelligent understanding of the modern conceptions of mental and nervous diseases. The rapidity and thoroughness with which he familiarized himself with these problems was unusual. He was a deep student and a dependable, loyal associate. In the short period of five years he had so efficiently trained himself that he was able to begin contributing to neurology in a manner which augured well. His contributions are only two in number but both show splendid abilities, efficiently applied. He was co-author of a neurological study entitled "Post-concussion Neurosis — Traumatic Encephalitis" published in the *Archives of Neurology and Psychiatry*, August, 1927. There is also an article as yet unpublished which is a review of the whole subject of Brachial Plexus injuries. This will be published soon as a posthumous work. In November, 1927, issue of the *Journal of Nervous and Mental Disease*.

Dr. Giliberti was a patient, lovable friend and a scholarly, devoted and dependable associate. A host of friends join in expressing their deep regret at his untimely passing. [M. Osnato.]

GUSTAV FRITSCH

Professor Gustav Fritsch died in June, 1927, in Berlin, at the age of eighty-nine. He was one of the last great personalities from the classic period of German medicine. He was a collaborator with Hitzig in the famous experimental studies on the cerebral cortex. As far back as 1862, he discussed in his doctor's thesis the central nervous system, and studied the anatomy of the spinal cord. In 1868, he became assistant to Professor Reichert at the Berlin Institute of Anatomy, and in 1869 he was appointed privatdozent at the University of Berlin. In 1877, he became director of the department of microscopy at the Physiologic Institute under DuBois-Reymond. The researches of Fritsch on the organs of "electric

fish" are well known. He published numerous articles in the fields of anthropology, comparative anatomy and microscopy, studying various organs, especially the brain. His researches on the human hair of the head and his "racial characteristics" have been incorporated in his large "Atlas." Another large work treats the human form from the standpoint of artists and anthropologists. Finally, his aid in the advancement of scientific photography deserves particular mention. [Berlin letter, J. A. M. A., August 20, 1927.]

NOTES AND NEWS

LECTURES ON PSYCHOANALYSIS

A course of fifteen lectures will be held under the auspices of the New York Psycho-analytical Society in New York City beginning in January, nineteen twenty-eight.

The topics for the lectures are: Introductory Survey, Sexual Theory, Dream Theory, General Theory of the Neuroses, Conversion and Anxiety Hysteria, Compulsion Neurosis, Psychoanalysis of the Psychoses, The Libido Theory, Psychoanalytic Technique, Psychoanalysis and Somatic Disease, Psychoanalysis and Child Guidance Delinquency, and Criminology.

The lecturers are: Drs. C. P. Oberndorf, T. H. Ames, M. A. Meyer, Adolph Stern, A. A. Brill, A. Kardiner, H. W. Frink, S. E. Jelliffe, and Bernard Glueck.

The registration fee will be five dollars. The fee for the course of lectures will be thirty dollars. Admission to single lectures, three dollars. A special rate of ten dollars for the entire course has been arranged for physicians serving their internship.

Opportunity will be offered for those desiring to supplement this course with practical work in the psychoanalytic approach to functional nerve disorders through courses in certain New York hospitals.

For further information kindly address Dr. Monroe A. Meyer, 17 East 38th Street, New York City.

A Correction: In the article by Dr. Alpers in the November issue, p. 477, 21st line, the word "lower" should read "upper."

N. B.—All business communications should be made to Journal of Nervous and Mental Disease, 64 West 56th St., New York.

All editorial communications should be made to Dr. Smith Ely Jelliffe, Managing Editor, 64 West 56th St., New York.

INDEX TO VOLUME 66

Figures with asterisk (*) indicate original articles and are accompanied with title. Figures unaccentuated, accompanied with title, indicate abstracts.

- A** BDOMINAL pain 523
 Abdominocardiac reflexes
 from surgical standpoint.. 271
 Abraham, K.556, 566
 Abrami, P.172
 Abreaction, therapeutic value of. 432
 Achondroplasia, congenital 646
 pathogenesis of clinical varieties
 of 646
 Achylia gastrica, etiologic relation
 of to combined sclerosis of
 spinal cord 73
 Actinotherapy, pigment formation
 of 410
 Adams, D. K.74, 77
 Addison's disease associated with
 lymphosarcoma 512
 Adiadochokinesia 185
 Adipose-genital syndrome and a
 post-encephalitic Parkinsonian
 291
 Adiposity, juvenile 659
 Adiposogenital dystrophia 657
 Adler, Alfred 50
 Agglutination 296
 Agraphia 101
 Akathisia 541
 Alajouanine, T.279, 530
 Alexander, F.686
 Allaben, G.644
 Allan, Wm.*131
 Almeida, M. O.412
 Alpers, B. J.416, *468
 Amebiasis, chronic intestinal.... 555
 Ameghino, A.698
 Amoss, H. L.413
 Amyotonia congenita, two cases
 of occurring in the same
 family 644
 Amyotrophic syphilitic meningo-
 myelitis*595
 André-Thomas281, 283
 Anemia, pernicious, mental
 changes associated with.... 691
 nucleated red cells found in
 circulation in 656
 treatment of with thyroid
 extract. 64
 Anesthetics, sensitivity of sympa-
 thetic to 278
 Angina pectoris, cervical sympa-
 thectomy for relief of..... 274
- Angioneurotic edema of glottis.. 511
 Animal psychology 699
 Antityphoid vaccination in Park-
 inson syndrome..... 417
 nervous and mental complica-
 tions of..... 277
 Apert, E.644
 Aphasia 98
 and kindred disorders of speech 568
 Appendix, isolated human vermi-
 form, physostigmin and pitui-
 tary extract on..... 524
 Archer, B. H.648
 Argyll-Robertson pupils*595
 sign in chronic epidemic enceph-
 alitis. 301
 Arnoldi, W.279
 Arrillaga, F. C.274
 Arsenic 322
 Arteriosclerotic rigidity and py-
 ramidopallidal syndrome 539
 Arthritis, endocrine element in... 647
 of menopause 648
 "As if" conceptions..... 98
 Asthma and hay fever..... 446
 and sexuality 551
 Besnier's prurigo in association
 with 516
 bronchial, psychogenesis and
 psychotherapy in 555
 nervous, psychoanalysis of case
 of 313
 of thyroid origin..... 172
 psychoanalysis in cure of..... 683
 Athetosis and chorea..... 668
 duplex and torsion dystonia... 672
 Athymia 190
 Atmospheric pressure, mechanical
 effect of at a high altitude... 272
 Atropin in treatment of encephal-
 itic Parkinsonian 292
 Auto-injections in post-encepha-
 litic syndromes 292
 Automatism, mental, syndrome of 59
 Avarice of Sylvius..... 431
 Ayres, Octavio 665
- B** AAGÖE, K. 516
 Baerwald, R. 326
 Bagg, H. J. 671
 Bailey, Percival59, 522

- Bakker, S. P. 283
 Balassa, L. 555
 Ballif, L. 698
 Balyeat, Ray M. 446
 Bang, S. 410
 Banning, P. W. 81
 Banting, F. G. 282
 Barany 701
 Barkman, A. 644
 Baruk, Henri 571
 Basal metabolic rates in some of
 the psychoneuroses 86
 metabolism of fat 658
 Basedow's disease, experimental
 observations in 68
 Basset 641
 Bastai, P. 186
 Battino, G. 514
 Bauer, J. 432
 Baylac 414
 Beall, C. G. 294
 Beaton, Thomas 442
 Bechterew, W. 702
 Benard, R. 174, 300
 Benzoin test in neurosyphilis 682
 Berghausen, Oscar 675
 Bergman, E. 527
 Bériel, L. 664
 Berkeley-Hill, O. 560
 Berlin Psychoanalytic Clinic 436
 Bertillon, F. 419
 Besnier's prurigo in association
 with asthma 516
 Bethe, A. 315
 Bielschowsky, A. 532
 Binet, Léon 549
 Bing, R. 541, 668
 Binswanger, L. 694
 Biography, the Doctor looks at. . . . 209
 Biology of the person. 91
 Bipolar theory of living processes . . 324
 Bircher, E. 68
 Birmam-Bera 551
 Bismuth preparations in treat-
 ment of syphilis 682
 Black, H. 514
 Blacklock, J. W. S. 74
 Bladder, innervation of 100
 Blair, E. G. 67
 Blamontier 292
 Blanton, Margaret Gray 445
 Blanton, Smiley 445
 Block, B. 682
 Blood chemistry under stimula-
 tion of vagus. 656
 pressure high 650
 renal function in patients
 with retinitis 527
 Blum, F. 320
 Blumenthal, K. 677
 Bodin, Jean 579
 Boeke 514
 Boenninghaus 422
 Bolt, W. 170
 Bolten, G. C. 408, 409
 Bonhoeffer, K. 205
 Book reviews:
 Baerwald, R., Zeitschrift für
 Kritischen Okkultismus 326
 Balyeat, Ray M., Hay Fever
 and Asthma 446
 Baruk, Henri, Les Troubles
 Mentaux dans les Tumeurs
 Cérébrales 571
 Bechterew, W., Allgemeine
 Grundlagen der Reflexologie
 des Menschen. Nach der
 dritten Auflage herausge-
 geben von Prof. Martin Pap-
 penheim 702
 Blanton, Smiley, and Blanton,
 Margaret Gray, Child Guid-
 ance 445
 Blum, F., Studien ueber die
 Epithelkörperchen, ihr Se-
 kret, ihre Bedeutung für den
 Organismus, die Möglichkeit
 ihres Ersatzes 320
 Bodin, Jean, Contre Freud.
 Critique de toute Psychologie
 de l'Inconscient 579
 Bonhoeffer, K., and His, W.,
 Beurteilung, Begutachtung
 und Rechtsprechung bei den
 sogenannten unfallneurosen . . 205
 Bouyer, Henri, and Martin-Sis-
 teron, L'Hygiène Mentale et
 Nerveuse Individuelle 319
 Breckinridge, Sophonisba P.,
 Public Welfare Administra-
 tion in the United States. . . . 574
 Bridges, James Winfred, An
 Outline of Abnormal Psy-
 chology 100
 Brugsch, Th., and Lewy, F. H.,
 Die Biologie der Person. . . . 91
 Bunnemann, Otto, Ueber die
 Organfiktion 204
 Cassirer, R., Henneberg, R.,
 Krankheiten des Rücken-
 marks und der peripherischen
 Nerven. Elfte Heft. Diag-
 nostische v. therapeutische
 Irrtümer v. deren Verhütung.
 J. Schwalbe. Zweite verbes-
 serte Auflage 444
 Castle, McClung, Dettelson,
 Slyle, Wells, and Guyer, Our
 Present Knowledge of He-
 redity 206
 Collin, André, Convulsions et
 Épilepsie des Enfants. 90
 Collins, Joseph, The Doctor
 Looks at Biography. 209

Book reviews—*Continued*

- Cornillier, Pierre Émile, *La Prediction de l'Avenir*..... 320
- Craig, Maurice, and Beaton, Thomas, *Psychological Medicine. A Manual of Mental Disorders for Practitioners and Students. Fourth Edition* 442
- Crile, George W., *A Bipolar Theory of Living Processes*. 324
- Czerny, Ad., *Der Arzt als Erzieher des Kindes. Siebente Auflage*..... 326
- Dana, Charles L., Riley, H. A., et al. *The Human Cerebrospinal Fluid. Proceedings of the Association for Research in Nervous and Mental Disease, New York, Dec. 29-30, 1924*..... 321
- Dejerine, J., *Sémiologie des Affections du Système Nerveux. Deuxieme Tirage*..... 576
- Dennig, Helmuth, *Die Innervation der Harnblase*..... 100
- Eagleton, Wells P., *Cavernous Sinus Thrombophlebitis and Allied Septic and Traumatic Lesions of the Basal Venous Sinuses*..... 441
- Eitingon, Max, *Zweiter Bericht über die Berliner Psychoanalytische Klinik*..... 436
- Erhard, Ignaz, *Seelische Ursachen und Behandlung der Nervenleiden*..... 323
- Ferenczi, Sándor, *Further Contributions to the Theory and Technique of Psychoanalysis*. 571
- Fox, George Henry, *Reminiscences*..... 445
- Frank, Karl, *Die Parteilichkeit der Volks und Rasse-Abergläubischen*..... 204
- Frank, Ludwig, *Vom Liebes- und Sexualleben*..... 323
- Freud, Sigmund, *Drei Abhandlungen zur Sexualtheorie. Sechste, durchgesehene Auflage*..... 578
- Freud, Sigm., *Eine Teufelsneurose in 17 Jahrhundert*..... 435
- Freud, S., *Zur Technik der Psychoanalyse und zur Metapsychologie*..... 438
- Fumarola, Gioacchino, *Diagnostica delle Malattie del Sistema Nervoso. Parte Speciale II. Midollo Spinale*..... 210
- Goddard, Henry Herbert, *Two Souls in One Body. A Case of Dual Personality*..... 705

Book reviews—*Continued*

- Goldberg, Isaac, *Havelock Ellis; A Biographical and Critical Survey*..... 209
- Haeberlin, Carl, *Vom Beruf des Arztes*..... 202
- Harris, Wilfred, *Neuritis and Neuralgia*..... 90
- Head, Henry, *Aphasia and Kindred Disorders of Speech. Two Volumes*..... 568
- Healy, William, and Bronner, Augusta F., *Delinquents and Criminals. Their Making and Unmaking. Studies in Two American Cities*..... 582
- Heller, Max, *Der Bewaffnete Pazifismus der Aufstiege*.... 204
- Helson, Harry, *The Psychology of Gestalt*..... 440
- Hempelmann, Friedrich, *Tierpsychologie vom Standpunkt des Biologen*..... 699
- Hermann, Georg, and Pötzl, Otto, *Ueber die Agraphie und ihre lokaldiagnostischen Beziehungen*..... 101
- Hess, W. R., *Ueber die Wechselbeziehungen Zwischen psychischen und vegetativen Funktionen*..... 99
- Hildebrandt, Kurt, *Gesundheit und Krankheit in Nietzsche's Leben und Werk*..... 443
- Hoffmann, Hermann, *Das Problem des Charakteraufbaus. Seine Gestaltung durch die erbbiologische Persönlichkeitsanalyse*..... 577
- Hovelacque, A., *Anatomie des Nerfs Craniens et Rachidiens et du Système Grand Sympathique chez l'Homme*.... 442
- Huldschinsky, Kurt, *Dementia Rachitica. Studien über die sogenannte zerebrale Komponente der Rachitis*..... 447
- Isserlin, Max, *Psychotherapie*.. 93
- Jaspers, Karl, *Strindberg und Van Gogh*..... 204
- Jean, Pierre, *La Psychologie Organique*..... 321
- Jolowicz, Ernst, *Die Persönlichkeitsanalyse*..... 100
- Jüngling, O., u. Peiper, H., *Ventrikulographie und Mvelographie in der Diagnostik des Zentralnervensystems*.... 210
- Kammerer, Paul, *Sind wir Sklavenher Vergangenheit oder Werkmeister der Zukunft*..... 204

Book reviews—*Continued*

- Keyser, Cassius J., *The Human Worth of Rigorous Thinking* 435
- Kobrak, Franz, *Ergebnisse und Ziele otoneurologischer Forschung* 207
- Koch, Richard, *Das Als Ob im aertzlichen Denken* 98
- Koffka, K., *The Growth of the Mind. An Introduction to Child Psychology* 93
- Krabbe, Knud H., *L'Organe Sous Commissural du Cerveau chez les Mammifères* . . 99
- Krentz, R. J., *Der Neue Mensch* 204
- Kretschmer, Ernst, *Der sensitive Beziehungswahn. Ein Beitrag zur Paranoifrage und zur Psychiatrische Charakterlehre. Zweite verbesserte und vermehrte Auflage* 573
- Kretschmer, Ernst, *Medizinische Psychologie* 97
- Lévy-Valensi, *Précis de Psychiatrie* 206
- Liertz, Rahban, *Wanderungen durch das gesunde und kranke Seeleben bei Kindern und Erwachsenen* 99
- Lloyd, Ralph I., *Visual Field Studies* 323
- Lortsch, S., *La Psychotherapie Religieuse. Ses Resultats—Sa Nature* 436
- Maeder, Alphonse, *Psychoanalyse und Synthese* 488
- Mahaim, Ivan, *Hepato-Lenticular Degeneration* 372
- Malinowski, Bronislaw, *Crime and Custom in Savage Society* 576
- Martin, Anna, *Die Gefühlsbetonung von Farben und Farbenkombination bei Kindern*. 205
- Mayo, Charles H., and Plummer, Henry W., *The Thyroid Gland* 326
- Minkowski, M., *The Present Position of the Theory of the Reflexes in Relation to Their Developmental History and to Anatomy and Physiology* . . . 94
- Morselli, Enrico, *La Psicanalisi. Studi ed Appunti Critici. Tomi I e II* 581
- Munro-Macleod, D. G., *The Psychopathology of Tuberculosis* 318
- Neuer, Alexander, *Mut und Entmutigung. Heft 3. Individuum und Gemeinschaft* . . 575

Book reviews—*Continued*

- Niessl v. Mayendorf, Erwin, *Ueber die Prinzipien der Gehirn mechanik* 448
- Pascal, C., et Daverne, J., *Traitement des Maladies Mentales par les Chocs* . . . 702
- Peck, Annetta W., Samuelson, Estelle E., and Lehmann, Ann, *Ears and the Man. Studies in Social Work for the Deafened* 435
- Périsson, Joseph, *Les Troubles Sympathiques dans l'Hémiplégie* 211
- Péron, Jean-Noël, *Contribution a l'Étude des Syndromes des Nerfs de la Queue de Cheval*. 447
- Petrén, Karl, *Les différentes Formes de l'Arsenicisme et en particulier de l'Arsenicisme provenant de l'habitation ou des Objets Domestiques* . . . 322
- Pfister, O., *Der seelische Aufbau des klassischen Kapitalismus und des Geldgeistes* . . . 98
- Piaget, Jean, *The Language and Thought of the Child* . . 705
- Pilcz, Alexander, *Lehrbuch der speziellen Psychiatrie für Studierende und Aerzte. Siebente, umgearbeitete Auflage* 444
- Pilcz, Alexander, *Ueber Hypnotismus, okkulte Phaenomene, Traumleben. u. s. w. Sieben Vorträge für gebildete Laien*. 580
- Plaut, Felix, *Paralysiestudien bei Neger und Indianern. Ein Beitrag zur vergleichende Psychiatrie* 201
- Podkopaew, N. A., *Die Methodik der Erforschung der bedingten Reflexe* 318
- Pophal, R., *Der Krankheitsbegriff in der Körpermedizin und Psychiatrie* 92
- Potet, M., *Hygiène Mentale* . . 444
- Pressey, Sidney L., and Pressey, Luella Cole, *Mental Abnormality and Deficiency* 207
- Prinzhorn, Hans, *Bildnerie der Gefangenen. Studie zur bildnerischen Gestaltung Ungewübter* 434
- Prudden, T. Mitchell, *Biographical Sketches and Letters. Edited and Prepared by his sister, Lillian E. Prudden* . . 572
- Ramos, Arthur, *Primitivo e Loucura* 322

Book reviews—*Continued*

Rank, Otto, <i>Die Don Juan Gestalt</i>	436
Rivers, W. C., <i>Through a Consulting Room Window</i>	206
Roffenstein, Gaston, <i>Das Problem des psychologischen Verstehens</i>	438
Rosenthal, Oscar, <i>Wunderheilungen und aertzliche Schutzpatrone in der bildenden Kunst</i>	208
Savage, G. C., <i>Ophthalmic Neuro-Myology</i>	91
Schiff-Wertheimer, Suzanne, <i>Les Syndromes Hémianopiques dans le Ramollissement Cérébral</i>	700
Schiff, Erich, <i>Das Autonome Nervensystem</i>	203
Schmitz, Oscar A. H., <i>Psychoanalyse und Yoga</i>	703
Schohaus, Willi, <i>Die theoretische Grundlagen und die wissenschaftstheoretische Stellung der Psychoanalyse</i>	437
Schou, H. I., <i>Religion and Morbid Mental States</i>	90
v. Skramlik, Emil, <i>Handbuch der Physiologie der niederen Sinne. I Band. Die Physiologie des Geruchs- und Geschmackssinnes</i>	325
Stekel, Wilhelm, <i>Frigidity in Woman in Relation to Her Love Life. Authorized English Version by James S. Van Teslaar. 2 Vols</i>	440
Stekel, W., Missriegler, A., und Gutheil, E., <i>Fortschritte der Sexualwissenschaft und Psychoanalyse</i>	434
Stier, Ewald, <i>Ueber die sogenannten Unfallneurosen</i>	205
Sudhoff, Karl, <i>Essays in the History of Medicine. Translated by various hands and edited with foreword and biographical sketch by Fielding H. Garrison</i>	699
Thalbitzer, S., <i>Emotion and Insanity</i>	202
Valière-Vialeix, V., <i>Optic Disturbances in Epidemic Encephalitis</i>	326
Van Gehuchten, A., <i>Les Maladies Nerveuses. Nouvelle Edition revue et mise à jour par le Dr. P. Van Gehuchten</i>	441
Wexberg, Erwin, <i>Your Nervous Child. Translated by W. B. Wolfe</i>	574

Book reviews—*Continued*

Wildermuth, Hans, <i>Seele und Seelenkrankheit</i>	576
Wilson, S. A. Kinnier, <i>Aphasia</i>	98
Wittels, Fritz, <i>Die Vernichtung der Not</i>	203
Wodak, Ernst, <i>Der Baranysche Zeigerversuch. Seine physiologischen Grundlagen und klinische Methodik</i>	701
Woröbiew, W., <i>Methodik der Untersuchungen von Nerven-elementen des makro- und mikroskopischen Gebietes</i>	208
Zeehandelaar, J., <i>Affekte, Psychotonie und autonomes Nervensystem in der Psychotherapie</i>	207
Booth, David S.	543
Borak, J. D.	661
Bose, G.	192
Boston Society of Psychiatry and Neurology	59
Bostreem, A.	290
Botulinus, B., <i>serologic classification of</i>	296
<i>bacillus, death from food poisoning due to</i>	294
<i>poisoning, histological study of central nervous system in</i>	296
Botulism, as seen in Scotland in 1922	294
<i>epidemic of</i>	295
<i>epidemiology of</i>	294
<i>oesophageal paralysis in</i>	295
<i>outbreak of</i>	294
<i>at Cambridge, Idaho</i>	294
<i>very severe case of</i>	296
Bouman, L.	682
Bourne, A. W.	697
Boutarel, Maurice	431
Bouttier	682
Bouyer, Henri	319
Boven, W.	192
Boyd, W.	533
Brachial plexus obstetrical paralyses	*449
Bradykinesia, unilateral	665
Bradykinesis, post-encephalitic	289
Bradykinetic encephalitis, mental state of	180
Brain, contribution of mammals to evolution of	149
<i>disease, congenital, striatal syndromes with</i>	179
<i>stem No. 5, studies on</i>	280
<i>temperature of, and liver, effects of drugs on</i>	526
<i>tumor in psychoses</i>	677
<i>mental troubles in</i>	571
<i>radiation in</i>	153
<i>wounds, reaction of neuroglia to</i>	505

- Bram, I. 168
 Bramwell, E. 665
 Brancati, R. 511
 Breckinridge, Sophonisba P. 574
 Breinert, B. 168
 Bridges, James Winfred. 100
 Brinkman, R. 83
 Brock, S. *460, 626
 Bronner, Augusta F. 582
 Brown, W. L. 554
 Bruce, H. A. 269
 Brugsch, Th. 91
 Brüning, F. 523
 Bumke, O. 549
 Bunker, H. A., Jr. 401
 Bunnemann, Otto 204
 Bureau, Y. 300
 Burhans, C. W. 676
 Burning, death from. 511
 Burns, cutaneous, gastro-intestinal
 ulceration following 512
 Buschmann, T. W. 75
 Byrne, J. 273
 Byschowsky, G. 670
- “CADET problems” 301
 Caillé, A. 196
 Calcium and acid-alkali balance.
 metabolism and the glycerophosphates. 276
 Calvert, E. G. B. 657
 Camp, C. D. 671
 Campbell, C. J. 416
 Campbell, C. M. 84
 Cancer, innervation as factor in
 experimental production of. 642
 of thyroid 70
 Capitalism 98
 Carcinoma, metastatic, of central
 nervous system *1, *133
 Cardiac irregularities due to ex-
 trasystoles 654
 Carleton, H. H. 683
 Carlson, A. J. 524
 Carmichael, E. A. 539
 Carnot, P. 292
 Carotid pressure reflexes. 652
 Cassirer, R. 444
 Cassidy, John Holland. *105, 260
 Castex, M. R. 180
 Castle. 206
 Castration complex 686
 female. 556
 Catathymia. 190
 Cauda equina 447
 Caussade. 289
 Cecil, Russel 648
 Celisse. 530
- Cerebellar disease, clinical symp-
 toms of 285
 hemispheres, clinical and ana-
 tomic study of vascular lesion
 of. 280
 stimulations. 282
 syndromes in aged. 663
 Cerebellum, anatomy of. 282
 localization in 283
 Cerebral cicatrix 505
 degeneration, familial, affecting
 lenticular nucleus 539
 functions and tobacco 549
 hemorrhage, hemianopsias due
 to. 700
 in newborn child. 679
 Cerebrospinal fluid, human. 321
 in encephalitis lethargica. 416
 sugar content of, in lethargic
 encephalitis. 300
 Cestan. *227
 Chagas' disease 65
 Chapman, Ross 302
 Character changes following en-
 cephalitis epidemica 418
 Characterological problems, hered-
 ity, and epileptoid condition. 88
 Chickenpox and herpes zoster. 514
 Child guidance 445
 language and thought of. 705
 nervous. 574
 psychology, introduction to. 93
 study. 314
 Children, analytic study of stereo-
 typed habit movements in. 46
 prognosis of sequelae of epi-
 demic encephalitis in. 423
 sucking habits of. 87
 with pylorospasm, fate of. 524
 Chorea and athetosis. 668
 and choreiform affections. 671
 Huntington's. 544
 treatment of by lumbar punc-
 ture. 541
 Chronaxia, vagus in, in heart. 654
 Ciotola, E. 516
 Clairvoyance. 567
 Clark, L. Pierce. 46
 Claude, H. 264, 651
 Claudication, intermittent 420
 Climacteric conditions, treatment
 of by X irradiation of pitui-
 tary and thyroid glands. 661
 Cloake, P. C. P. 667
 Cockrell, J. R. 416
 Cohn, M. 87
 Collier, James 297
 Collin, André *90
 Collins, Joseph 209
 Color feeling 205
 Coma with pituitary tumor. 44

- Consciousness, so-called disturbances of 197
 Constitution and race 191
 Convulsions of children 90
 Cookson, H. A. 300
 Core, D. E. 534
 Coriat, I. H. 567, 695
 Cornillier, Pierre Émile 320
 Corpus striatum, lesions of by radium emanation 671
 Cousin, G. 189
 Cowdry, 296
 Craig, Maurice 442
 Cramer, N. 642
 Crane, A. W. 512
 Cranial nerves 442
 Creatine and relation between increased muscle tension 645
 Crichton-Miller, H. 200
 Crile, George W. 324, 526
 Crime and custom in savage society. 576
 Criminals and delinquents 582
 Cross, D. G. T. K. 524
 Crozier, W. J. 273
 Crying and laughing, pathological 79
 Cuno, F. 645
 Custom and crime in savage society. 576
 Cutaneous senses, rôle of in spatial perceptions *585
 Cutter, J. B. 294
 Czerny, Ad. 326

D A FANO, C. 188
 Dana, Charles L. 321
 Danzer, C. S. 653
 Daverne, J. 702
 Deafness, psychic 555
 Death by burning, pathogenesis of with reference to study of nervous system 511
 De Costobadie, L. P. 415
 Deficiency and mental abnormality. 207
 De Giacomo, U. 422
 Dejerine, J. 576
 Delgado, H. F. 697
 Delinquents and criminals 582
 Dementia precox, gold reaction in histology and treatment of... 698
 rachitica 447
 Dennig, Helmuth 100
 "Depersonalization" 560
 Depressions, hypochondriacal 393
 Dermatophobia. 513
 Dermatoses and endocrine glands. 412
 biologic basis for treatment of.. 515
 relation of sympathetic system to. 514
 Dermatitis, psychogenic, lichenoid eruption as 192
 De St. Martin, R. 295
 Detlefsen. 206
 Deutsch, G. 525
 Deutsch, G. 523
 Diagnosis of diseases of the nervous system 210
 Diathesis, exudative 408
 Dickson, E. C. 293
 Diplopia, early sign of encephalitis lethargica 532
 Disease conceptions 92
 Divergence, paralysis of due to epidemic encephalitis 181
 Doctor as educator 326
 problems of 202
 Doerr, R. 530
 Don Juan 436
 Dream analysis, methods of 433
 interpretation, notes on theory and practice of 305
 life. 580
 narcissistic valuation of excretory processes in 566
 physiologic diagnostic 191
 Dreams illustrating the symbolism of water and fire 316
 Dresel, K. 269
 Drug addiction *22
 Drugs, effects of on temperature of brain and liver 526
 Dual personality 705
 Dubois, M. 73
 Ductless glands and obesity carbohydrate metabolism 657
 Dunnington, J. H. 181
 Dupérié 651
 Dupouy 192
 Duthoit. 291
 Dysmenorrhea, psychotraumatic. 433
 Dystonia musculorum, visceral disorders associated with in epidemic encephalitis 630
 Dystrophia myotonica, case showing Westphal's paradoxical foot contraction and similar phenomenon in fingers 644

E AGLETON, Wells P. 441
 Ears and the man 435
 East, C. F. T. 679
 Eckel, John L. *1, *133
 Economics 203
 Ectodermatoses, neurotropic 672
 Eczema, thyroid treatment of... 174
 treatment of 409
 Eddy, N. B. 645
 Edelberg, H. 433
 Edema, angioneurotic, of glottis.. 511
 from vascular spasm 651
 segmental trophic, of cerebral origin. *381
 Edgeworth, F. H. 538

- Edling, Lars 176
 Education and interpretation.... 302
 Edwards, D. J. 671
 Einthoven, W. 273
 Eisler, M. J. 684
 Eitington, Max 436
 Electrocardiogram after sym-
 plectomy. 274
 Elekes, N. 297, 539
 Ellis, A. W. M. 527
 Ellis, Havelock 209
 Emotion and eye symptoms.... 316
 and insanity 202
 in mental disorder as shown by
 psychogalvanic reflex 197
 Encephalitic, chronic (adult),
 mental condition of..... 417
 dystonia *460
 Parkinsonian syndromes, atrop-
 pin in treatment of..... 292
 Encephalitis, epidemic..185, 187,
 189, 190, 299, 414, 420, 534, 538,
 acute hemorrhagic 187
 and acute hemorrhagic ne-
 phritis, following varicella. 531
 acute toxic, of nasal sinus ori-
 gin. 533
 after mumps 532
 and acute anterior poliomyelitis,
 note on comparative histo-
 pathology of 77
 and herpes186, 531
 etioloical research on..... 530
 Argyll-Robertson sign in..... 301
 atypical forms of..... 416
 bradykinetic, mental state of... 180
 cerebrospinal fluid in..... 416
 character changes following... 418
 chronic. 183
 Parkinson syndrome due to. 420
 clinical and anatomical-patho-
 logical contribution to study
 of..... 289
 clinical sequelae of..... 290
 complicated by psychoses..... 286
 contagion in its Parkinsonian
 phase. 530
 contagiousness of 529
 diffuse periaxial, type Schilder. 297
 erythema scarlatiniforme in... 414
 experimental virus 413
 extensive hemorrhage into pitu-
 itary in case of..... 415
 eye in 532
 from ophthalmological stand-
 point. 185
 herpetic. 188
 hiccup and heredity in..... 539
 histopathology of central nerv-
 ous system in..... 290
 hyperkinetic symptoms in..... 290
 Encephalitis—*Continued*
 in infancy 532
 in Sweden 527
 in Tokyo 300
 involuntary movements in..... 667
 mental sequelae of...421, 665, 667
 mucin-like bodies in central
 nervous system in..... 419
 multiple abortive cases of..529, 537
 multiple felons in..... 419
 nervous system, influenza, rela-
 tion of 415
 neuroses following 185
 oculomotor lesions in..... 189
 optic disturbances in..... 326
 pain with 291
 paralysis agitans as sequel of.. 182
 paralysis of divergence due to.. 181
 parkinsonism after 184
 treatment of 293
 periaxialis diffusa, familial
 form of*329, *479, *616
 of Schilder 297
 polydipsia in 533
 post-grippe, forms of unusual
 in location 185
 post-mortem report on..... 529
 prognosis of sequelae of in child-
 ren. 423
 psychopathology of conditions
 following. 289
 rare manifestations of..... 423
 rarer symptoms and forms of.. 190
 respiratory and sleepless forms
 of..... 184
 second Winnipeg outbreak.... 533
 sequelae of 186
 sleep and effect of scopolamin.. 291
 sodium salicylate in..... 300
 sugar content of cerebrospinal
 fluid in 300
 tetanoid and tetaniform spasms
 in..... 665
 tics in 419
 treatment of292, 528, 530
 ultimate prognosis of..... 187
 visceral disorders associated with
 dystonia musculorum in..... 630
 weakness of uvula after..... 422
 with diplopia as an early sign.. 532
 Endocranial casts of man and
 prehistoric man, comparative
 studies of surfaces of..... 621
 Endocrine element in arthritis... 647
 glands, action of preparations
 of upon work done by skel-
 etal muscle 645
 and dermatoses 412
 Endocrines in psychoneuroses.... 554
 Endocrinology and psychiatry.... *15

- Endocrinous glands, relation of
organic diseases of central
nervous system to previous
operative removal of..... 78
- Engelbach, W. 659
- Engelen. 433
- Enuresis types, differentiation of. 527
- Environment and primitive man.. 89
- Epiconus, lesions of.....*468
- Epidemiology of botulism..... 293
- Epilepsy in children..... 90
- intravenous injection of calcium
salts in treatment of..... 259
- Epileptic states, psychology of... 196
- Epileptoid condition, heredity, and
characterological problems .. 88
- Epiphora and rhinorrhea..... 516
- Erhard, Ignaz 323
- Exanthem in epidemic myeloen-
cephalitis. 424
- Excretory processes, narcissistic
valuation of in dream and
neuroses. 566
- Extrapyramidal development, case
showing unusual type of.... 390
- hemiplegia. 542
- motor system and substantia
nigra .. 668
- "rigidity". 541
- Extrasystoles, cardiac irregulari-
ties due to 654
- Exudative diathesis 408
- "paroxysms". 409
- syndromes, paroxysmal 408
- Eye in encephalitis..... 532
- symptoms and emotion..... 316
- F**AITH, religious 436
- Fat, basal metabolism of.... 658
- Favill, John 519
- Federighi, H. 273
- Felons, multiple, in epidemic en-
cephalitis. 419
- Female castration complex..... 556
- homosexuality. 565
- Ferenczi, Sandor 571
- Ferraro, Armando.....*329, *479,
501, *616
- Filariasis with psychosis..... 697
- Finkelnburg, R. 78
- Fischer, B. 419
- Fischer, S. 197
- Fisher, F., Jr. 431
- Flandrin, P. 526
- Flexner, S. 413
- Flournoy, H. 316
- Flye. 414
- Foix, Ch. 518
- Folk lore in psychiatry..... 322
- Folkmar, E. O. 658
- Forel. 560
- Foster, H. E. 416
- Foster, L. J. 87
- Fox, George Henry..... 445
- Fox, H. R. 660
- Frank, Karl 204
- Frank, Ludwig 323
- Frassi, L. 67
- Freud, Sigmund .. 198, 305, 435,
438, 565, 578, 579
- Freund, H. 642
- Frigidity in woman in relation to
her love life..... 440
- Fumarola, Gioacchino 210
- G**AIT in hysteria..... 88
- Galant, J. S. 433
- Galup, J. 652
- Ganter, G. 521
- Garrahan, J. P. 72
- Garrelon. 264
- Gas exchange in diseases of thy-
roid gland 177
- Gastric nerves, lesions of..... 523
- neuroses, treatment of..... 191
- Gastro-intestinal ulceration follow-
ing cutaneous burns..... 512
- Gatewood, E. T. 533
- Gaud. 295
- Gaujoux, E. 77
- Geiger, J. C. 293
- Gerber, Rubin A.*355
- Gerstenberger, H. J. 676
- Gestalt, psychology of..... 440
- Giese, H. 560
- Giliberti, Vincent*449
- Glaser, F. 277
- Globus pallidus and substantia
nigra, comparative anatomical
investigations on connections
between. 180
- Glottis, angioneurotic edema of.. 511
- Glueck, Bernard 302
- Glycemia in post-encephalitic Par-
kinsonian syndrome and in
Parkinson's disease..... 422
- Glycerophosphates and calcium
metabolism. 276
- Goddard, Henry Herbert..... 705
- Goering, D. 648
- Goetsch's test and radiotherapy in
affections of thyroid gland... 178
- Goiter, exophthalmic 168
- gastric secretion in..... 65
- method of treating..... 172
- mortality in surgery of..... 169
- pathogenesis of 70
- pituitary treatment in..... 64
- pulse pressure in..... 171
- results obtained by röntgen
treatment of 176
- share of interbrain in..... 65
- with tuberculous thyroid..... 67
- oculocardiac reflex with..... 65

- Goiter—*Continued*
 prophylaxis of 69
 simple and exophthalmic, in-
 verse relation between iodine
 food and drink..... 66
 prevention of 175
 treatment and prophylaxis of 167
 treatment of with ultraviolet
 rays..... 172
Golant-Ratner, R.646, 697
Golay, J. 514
Gold reaction in dementia precox 697
Goldberg, Isaac 209
Goldstein, K. 544
Goodhart, S. Philip....286, 390, 630
Goodpasture, E. W..... 299
Gordon, Alfred*381, 542, 640
Gordon, M. B..... 531
Gordon, R. G..... 683
Grafting treatment of paralysis
 agitans..... 80
Granulocytopoiesis in salamander 656
Graves' disease, registration of
 tremors in 67
Greenfield, J. G..... 297
Gregory, M. S..... 424
Greil, A. 641
Grön, K. 513
Guillain, G.279, 530
Gundersen, E. 424
Gutheil, E. 434
Guyer, 206
Gynecological practice, neurolog-
 ical diseases as manifested in 308
- H**ABIT movements in children. 46
Haeberlin, Carl 202
Haecker. 562
Haematomyelia and syringomyelia 74
Hagelstam, Jarl185, 415
Hall, A. J. 185
Halley, G. L..... 64
Hallucinations, experimental study
 of..... 60
Hallucinatory psychoses, chronic. 59
Hannay, M. G..... 513
Harnik, J. 691
Harries, D. J..... 168
Harris, I. 171
Harris, Wilfred 90
Harttung..... 522
Hassin, G. B.....77, 286
Hathaway, Joseph C..... 66
v. Hattingberg 428
Hauptmann..... 194
Havelock Ellis 209
Hay fever and asthma..... 446
Haymann..... 72
Head, G. D. 517
Head, Henry 568
Healing, magic 208
 mental and spiritual..... 81
- Healy, William 582
Hearn, R. 681
Heart block and oculocardiac re-
 flex 654
 vagus in chronaxia in..... 654
Heiser..... 72
Heller, Max 204
Helson, Harry 440
Hemianopsias due to cerebral
 hemorrhage 700
Hemiplegia, extrapyramidal 542
Hemiplegic, sympathetic in..... 211
Hemorrhage, cerebral, hemianop-
 sias due to..... 700
 in newborn child..... 679
 extensive, into pituitary in case
 of lethargic encephalitis.... 415
 in spinal cord resulting from
 overexertion..... 78
 meningeal 676
 ventricular, in purpura..... 679
Hempelmann, Friedrich 699
Henneberg, R. 444
Henner, K.88, 293
Hepato-lenticular degeneration .. 327
Herbs, miraculous 564
Hereditary transmission of talent
 for music 562
Heredity and hiccup in epidemic
 encephalitis..... 539
 characterological problems, and
 epileptoid condition 88
 laws of 644
 present knowledge of..... 206
 status 643
Hering, H. E..... 652
Heringa. 514
Hermann, Georg 101
Hermann, Imre 303
Herpes and encephalitis.....186, 531
 etiologial research on..... 530
 zoster and chickenpox..... 514
Herpetic strains of encephalito-
 genic virus 413
Herz, M. 317
Herzfeld, E. 65
Hesnard..... 180
Hess, W. R..... 99
Hiccup and heredity in epidemic
 encephalitis..... 539
 epidemic..... 183
Higier, H. 190
Hildebrandt, Kurt 443
Hindu, anal-erotic factor in re-
 ligion, philosophy and char-
 acter of 560
His, W. 205
Hobson, Sarah M..... 311
Hoffman, Hermann 577
Holman, Leslie B.....393, 418
Holmes, G. 285
Holst, J. 70

- Homburger, A. 192
 Homosexuality, female 565
 Hovelacque, A. 442
 Hughson, Walter 662
 Hulschinsky, Kurt 447
 Hummel, H. 279
 Humoral pathology and Virchow
 transmission of nervous excita-
 tion 83
 Hunter, J. I. 518, 522
 Huntington's chorea 544
 Hutinel, J. 539
 Hydrocephalus in psychoses 677
 Hyperkinetic symptoms in epi-
 demic encephalitis 290
 Hypernephroma, spinal metastasis
 of. 75
 Hypertension in menopause 652
 Hyperthyroidism, differential di-
 agnosis of 174
 heteroactivity of pituitary gland
 with 660
 iodin treatment of 177
 new clinical sign of 166
 Hypnotism. 580
 Hypochondriacal depressions 393
 Hypophysis cerebri, meningeal re-
 lations of 662
 Hypothalamus syndrome 279
 Hypothymergiasias, hypochondria-
 cal. 393
 Hypothyroidism, defense against
 infections in 171
 treatment of by thyroid trans-
 plantation. 174
 Hyslop, George H. 153
 Hysteria 684
 forms of 88
 theory of 433
 tight-rope walking gait in. 88
 Hysterical pain 683
 paralysis 87
- I**DIOPATHIC priapism 76
 Impotency, psychic, functional
 psychoses as evolution of.*105
 psychosexual, functional psy-
 chosis as a development of 260
 Individual and society 575
 Influenza, nervous system, and epi-
 demic encephalitis, relation of 415
 Ingvar, S. 282
 Inhibition and sleep 83
 Inman, W. S. 316
 Innervation as factor in experi-
 mental production of cancer. 642
 double, of voluntary muscle,
 significance of 518
 of the bladder 100
 sympathetic, and heat production
 in skeletal muscles 520
- Innervation—*Continued*
 vegetative. 407
 and neuromuscular apparatus 646
 Insanity and emotion 202
 puerperal 697
 Instincts, theory of 428
 Intercolumnar tubercle 283
 Intermittent claudication 420
 Interpretation and education 302
 Intestinal amebiasis, chronic 555
 Intestines and suprarenal hormone
 motility of and thyroid 524
 523
 Intraventricular treatment of pare-
 sis.*227
 Involuntary movements 626
 in epidemic encephalitis 667
 Iodine, effect of on thyroid gland. 168
 inverse relation of in food and
 drink and goiter, simple and
 exophthalmic. 66
 therapy, dangers of 69
 treatment in diseases of thyroid
 gland. 171
 of hyperthyroidism 177
 Iorgoulesco 682
 Irritability during sleep 431
 Isserlin, Max 93
- J**ACKSON, J. B. 512
 Jacobi. 272
 Janet, Pierre 317
 Jaspers, Karl 204
 Jean, Pierre 321
 Johnson, F. 265
 Jokl, R. H. 309
 Jolowicz, Ernst 100
 Joltrain, E. 539
 Jones, Ernest 315
 Jordon, H. E. 656
 Josephson, E. M. 167
 Josephy, H. 698
 Jung, C. G. 432
 Jüngling, O. 210
 Juster. 515
- K**AHN, P. 684
 Källmark, F. 511
 Kammerer, Paul 204
 Kansuh and its diseases 550
 Kant, Otto 417
 Karger, P. 86
 Karplus, I. P. 412
 Katz, S.*460
 Katzenelbogen, S. 520, 528
 Keijser, S. 76
 Kelly, O. F. 693
 Kennedy, Roger L. J. 423
 Kerns, Harry N. 301
 Kerppola, W. 64
 Keyser, Cassius J. 435
 Kidney, denervation of 526
 Kimball. 175
 Kimball, O. P. 174

- Kinard, K. 67
 Kinesia paradoxa 541
 King, G. E. 550
 King, John T., Jr. 177
 Kirschbaum, W. 525
 Klarfeld, B. 290
 Kläsi, J. 191
 Klein, Elmer 259
 Kleptomania and masochism.... 560
 Klippel. 283
 Knox, W. W. N. 294
 Kobrak, Franz 207
 Koch, Richard 98
 Kocher, A. 174
 Koffka, K. 93
 Kolb, Lawrence *22
 Krabbe, Knud H. 99, 301
 Krasnogorski, N. 85
 Kraus, E. J. 657
 Kraus, W. M. 419
 Krebs, E. 667
 Krentz, R. J. 204
 Kretschmer, Ernst 97, 191, 573
 Kretschmer's psychophysical
 types 684
 Kühl, W. 80
 Kümmell, H., Jr. 264
 Kylin 650

L AFFONT, A. 77
 Laignel-Lavastine, M. 88, 271, 275
 Lakaye, R. 681
 Lamalle, A. 414
 de Lange, C. 532
 Langemak. 172
 Langmead, F. S. 657
 Lapique 654
 Larynx, myxedema of. 167
 Latah in Malay races. 698
 La Torre, M. 180
 Laughing and crying, pathological 79
 Lebedjew, A. J. 409
 Left and right handedness, statis-
 tics on 315
 handedness as educational prob-
 lem. 196
 Legrand. 291
 Legueu, F. 526
 Lehmann, Ann 435
 Lemos, Magalhaes 420
 Lenhart. 175
 Lenz, Maurice 153
 Léopold-Lévi. 316
 Léri, A. 646
 Leriche, Rene 269, 408
 Leroy, A. 414
 Leschke, E. 265
 Lesué, E. 180
 Levaditi, C. 531, 672
 Levine, B. S. 86
 Levine, S. A. 75
 Lévy, G. 184
 Lévy-Frankel, A. 515
 Lévy-Valensi. 206
 Lewy, F. H. 91
 Leyser, E. 418, 526
 Lhermitte, J. J. 419, 663
 Libby, G. F. 185
 Libido conflict in case of schizo-
 phrenia 695
 Lichenoid eruption as psychogenic
 dermatosis. 192
 Liepmann, W. 190
 Liertz, Rahban 99
 Limax, phototropic circus move-
 ments of as affected by tem-
 perature. 273
 Linossier, Mlle. 646
 Lipodystrophia progressiva 660
 Lipoids and vegetative system.... 269
 Lissner, Henry H. 166
 Litt, P. 524
 Liver and striatal syndromes. 180
 and temperature of brain, effects
 of drugs on 526
 animal experimentation concern-
 ing the influence of severe in-
 juries to upon the central
 nervous system 525
 rôle of in nervous and mental
 diseases. 526
 Lloyd, Ralph I. 323
 Loeper, M. 523
 Looney, Joseph 645
 Lortsch, S. 436
 Love life 323
 Lues, congenital and pseudo-
 paralysis 681
 Lumbar puncture, treatment of
 chorea by 541
 Lundberg. 521
 Lundholm, Helge 60
 Lyle, R. P. R. 550
 Lymphatism and vegetative sys-
 tem. 279
 Lymphocytes, studies on 656
 Lymphosarcoma in Addison's dis-
 ease. 512

M AAS, O. 76
 MacNalty, A. S. 421
 Macroscopical anatomy of nerv-
 ous system 208
 Madsen, S. Tschudi. 187
 Maeder, Alphonse 448
 Magic healing 208
 Mahaim, Ivan 327
 Maier, H. W. 190
 Malamud, William *585
 Malinowski, Bronislaw 576
 Malmström, V. 515
 Mann, L. 530
 Marchal. 300

- Marginal preferences as primary process. 303
- Marie, Pierre 184, 175
- Marine. 171
- Marinesco. 171
- Marquard, K. 185
- Marrack, J. R. 527
- Martin, Anna 205
- Martin-Sisteron. 319
- Marx, E. 555
- Masochism and kleptomania. 560
- Mass psychology 435
- Matsui, Kiyoshige 300
- Mayo, Charles H. 326
- Mayrhofer-Grünbühl, J. 532
- McClendon, J. F. 66
- McClung. 206
- McClure, R. D. 274
- McConnell. 187
- McCrudden, F. H. 517
- McNeil, A. S. 529, 537
- Medicine, essays in history of. 699
- psychological 442
- Medullary and pontile syndromes. 355
- sympathetic syndromes 275
- Meggendorfer, F. 291
- Memories, unreal 317
- Mendel's laws and the physician. 641
- Meningeal hemorrhage 676
- reactions 675
- relations of hypophysis cerebri 662
- Meningitis serosa in psychoses. 677
- Meningomyelitis, amyotrophic syphilitic 595
- Menninger, Karl A. 187
- Menopause, arthritis of. 648
- vessel pains and hypertension in 652
- Menstruation and psyche. 194
- Mental abnormality and deficiency. 207
- automatism, syndrome of. 59
- changes in pernicious anemia. 691
- condition of chronic (adult) encephalitic. 417
- conflicts and physical symptoms 424
- disease and shock. 702
- rôle of liver in. 526
- tuberculosis in 698
- disorder, emotion in as shown by psychogalvanic reflex. 197
- manual of for practitioners and students 442
- military significance of. 637
- hygiene. 311, 319, 444
- sequelae of encephalitis. 421, 665, 667
- state of bradykinetic encephalitis. 180
- states, morbid, and religion. 90
- troubles in brain tumors. 571
- Metabolism and sympathetic system. 265
- calcium, and the glycerophosphates. 276
- in scleroderma 517
- in thyroid disease. 167
- Metapsychology. 438
- Meyer, K. F. 293, 296
- Micrographia. 541
- Migraine, relation of occupation to. 131
- Mihalescu, S. 297, 539
- Military significance of common mental disorders 637
- Miller, F. R. 282
- Milligan, W. 678
- Mills, George W. T. 643
- Mind and serum calcium. 432
- growth of 93
- Mingazzini, G. 289
- Minkowska, F. 88
- Minkowski, M. 94, 192
- Miraculous herbs 564
- Missouri-Kansas Neuropsychiatric Society 636
- Missriegler, A. 434
- Mitchell, E. G. 191
- Mitchell, H. S. 265
- Mitochondria content of thyroid as index to activity of gland. 170
- Molière and the doctors. 641
- Moltschanoff, V. 411
- Monro, T. K. 294
- Moos, E. 683
- Moreira, M. 533
- Morel, C. 295
- Moren, John J. 182
- Morselli, Enrico 581
- Motion, postencephalitic deformities of 286
- Mucin-like bodies in central nervous system in epidemic encephalitis. 419
- Multiple sclerosis 637
- case with unusual symptom. 624
- Mumps, encephalitis after. 532
- Munk, F. 65
- Munro-Macleod, D. G. 318
- Muscle atrophy, juvenile, an avitaminosis 645
- involuntary, antispasmodic treatment of 520
- skeletal, action of preparations of endocrine glands upon work done by. 645
- striated, automatic contraction of in man. 520
- tension, increased, relation between and creatine. 645
- tone and sympathetic ramification 277
- incidence of 663

- Muscles, smooth, effect of hy-
drastinine on 521
influencing. 521
- Muscular and skin tonus..... 412
atrophy after resection of sym-
pathetic nerve 522
- Music, hereditary transmission of
talent for 562
- Myasthenia, grave pseudoparaly-
tic 645
gravis and ovarian deficiency.. 646
- Myelo-encephalitis, epidemic, with
exanthem. 424
- Myokymia, case of..... 522
- Myopathy, alterations of nervous
system in 518
- Myotonia, congenital familial,
contagion in 538
- Myxedema in infants..... 64
of the larynx..... 167
- N**AILS, congenital familial atro-
phy of 516
- Naito, I. 659
- Narcissism in men and women... 691
- Nasal sinus origin of acute toxic
encephalitis. 533
- Naville, F. 189, 290
- Nayrac, P. 179
- Nazari. 74
- Neel, A. V..... 416
- Neokinesis. 149
- Nephritis, acute hemorrhagic, and
acute hemorrhagic encephalitis
following varicella 531
- Nerve blocking, mechanism of... 279
cell changes, significance of in
relation to clinical diagnosis. 693
- Nerves, gastric, lesions of..... 523
periarterial 655
- Nervous and mental complications
of antityphoid vaccination. 277
manifestations following pro-
longed use of valerian... 640
- asthma, psychoanalysis of case
of. 313
- child. 302, 574
- diseases. 441
and psyche 323
rôle of liver in..... 526
- disturbances of organs..... 432
- element in worry..... 88
- excitation, humoral transmission
of. 83
- system, alterations of in myop-
athy. 518
central, animal experimenta-
tion concerning the influ-
ence of severe injuries to
the liver upon..... 525
- Nervous system, central—*Continued*
histological study of in ex-
perimental botulinus pois-
oning. 296
histopathology of in enceph-
alitis epidemica 290
metastatic carcinoma of.*1,*133
mucin-like bodies in, in epi-
demic encephalitis 419
organic diseases of and
their relation to previous
operative removal of en-
docrinous glands 78
ventriculography in diag-
nosis of 210
diagnosis of diseases of.... 210
influence of on bones and
joints 648
macroscopical anatomy of... 208
influenza, and epidemic en-
cephalitis, relation of..... 415
involuntary, and psyche..... 551
pathogenesis of death by
burning, with special refer-
ence to study of..... 511
sympathetic, postural influence
of 522
surgery of 269
vegetative 203, 277
and psychotherapy 207
in health and disease..... 278
relationship of psyche to... 99
- Neuer, Alexander 575
- Neumann, W. 567
- Neuralgia and neuritis..... 90
- Neurasthenia and suprarenal de-
ficiency..... 316
chronic pelvic pain in relation
to..... 550
- Neuritis and neuralgia..... 90
- Neurofibroma, plexiform, of solar
plexus. 269
- Neuroglia, reaction of to brain
wounds. 505
- Neurological diseases as mani-
fested in gynecological prac-
tice. 308
- Neuromuscular apparatus and
vegetative innervation 646
- Neuro-myology, ophthalmic 91
- Neuron differentiations in em-
bryo chicks during first days
of incubation 639
- Neuropathology, interpretation in.*217
- Neuroses and unsuitable housing. 317
following epidemic encephalitis. 185
gastric, treatment of..... 191
narcissistic valuation of excre-
tory processes in..... 566
prevention of 50
rôle of "organ superiority" in. 314
traumatic. 205

- Neurosis and psychosis..... 198
 sphenopalatine ganglion 431
 Neurosyphilis, benzoin test in.... 682
 treatment of 681
 Neurotic conditions, social ap-
 proach to*601
 Neurotropic ectodermatoses 672
 Newton, F. C..... 520
 New York Neurological Society..
 44, 149, 390, 499, 621
 Nicholson..... 296
 Nicholson, F. M..... 69
 Nicolau, S..... 411
 Nicolesco, I..... 518
 Niessl v. Mayendorf, Erwin..... 448
 Nietzsche's work and life, health
 and sickness in..... 443
 Nobécourt, P..... 282
 Novak, E..... 512
 Nunberg, H..... 695
- O**BERNDORF, C. P..... 314
 Obesity carbohydrate metab-
 olism and ductless glands 657
 of cerebral origin 659
 Obituaries:
 Coe, Henry Waldo..... 103
 Da Fano, C..... 102
 Foix, Charles 102
 Fritsch, Gustav 718
 Giliberti, Vincent 717
 Heveroch, Anton 103
 Hurd, Henry Mills..... 706
 Schnyder, Louis 584
 Webber, Samuel Gilbert..... 212
 Object choice and transference,
 significance of for theory of
 instincts..... 428
 Occipito-cerebello-vertebral angle,
 syndrome of 282
 Occult phenomena 580
 Occultism 326
 Oculocardiac reflex and heart
 block 654
 in respiratory diseases..... 652
 with goiter 65
 Oculomotor lesions in lethargic
 encephalitis 189
 Odier, C..... 567
 Oesophageal paralysis in botulism 295
 Olacchea, M. G..... 190
 Olivo-ponto-cerebellar atrophy .. 283
 Ophthalmic neuromyology..... 91
 Optic disturbances in epidemic
 encephalitis 326
 perception, psychology and pa-
 thology of 565
 Organ fiction 204
 "Organ superiority," rôle of in a
 neurosis..... 314
 Organic psychology 321
- Organotherapy in Raynaud's dis-
 ease 651
 Organs, nervous disturbances of. 432
 Oto-neurology 207
 Ovarian deficiency and myas-
 thenia gravis 646
- P**ACHYMENINGITIS, inter-
 nal hemorrhagic, in infancy 676
 Pacifism 204
 Pain, sense of in skin exposed to
 ultra-violet rays 515
 Pajzs, P..... 172
 "Palilalia" in post-encephalitic
 Parkinsonism 300
 Palitzsch, F..... 186
 Papez, J. W..... 663
 Papilloma of fourth ventricle.... 664
 Paraf, J..... 282
 Paralysis agitans 180, 543, 545
 and Wilson's disease..... 179
 as sequel of encephalitis..... 182
 grafting treatment of..... 80
 brachial plexus obstetrical....*449
 crossed 283
 experimental, in dogs..... 419
 family periodic 519
 general, and physical constitu-
 tion 401
 hysterical 87
 infantile, pelvis in 77
 oesophageal, in botulism..... 295
 of divergence due to epidemic
 encephalitis 181
 periodic, of limbs..... 522
 Parathyroid 320
 Paresis among negroes and In-
 dians 201
 intraventricular treatment of..*227
 Parkinson syndrome, antityphoid
 vaccination in 417
 due to chronic encephalitis... 420
 post-encephalitic, pathogenesis
 of 414
 Parkinsonian phase of epidemic
 encephalitis, contagion of... 530
 post-encephalitic, and adipose-
 genital syndrome 291
 syndromes, encephalitic, atropin
 in treatment of 292
 post-encephalitic 636
 glycemia in 422
 Parkinsonism after epidemic en-
 cephalitis 184
 encephalitis, treatment of..... 293
 post-encephalitic 181, 531
 large tubercle of pons in.... 664
 treatment of 418
 with "palilalia"..... 300
 Paroxysmal exudative syndromes 408
 Paroxysms, exudative 409

Pars suboculomotoria of the substantia nigra, connections of.	501	Pituitary— <i>Continued</i>	
Parsons, A.	421	gland, heteroactivity of with	
Pascal, C.	702	hyperthyroidism	660
Paterson, D.	539	treatment in exophthalmic	
Pathologic nomenclature, is it		goiter	64
either scientific or sensible....	642	tumor with coma.....	44
Pauchet	70	Plaut, Felix	201
Paulian, D.	531	Plummer, Henry W.....	326
Pavlov, I. P.	551	Podkopaew, N. A.....	318
Pearse, I. H.	69	Poiré, A.	698
Peck, Annetta W.....	435	Poisoning, CO, clinical and ana-	
Peiper, A.	431	tomical findings in case of...	179
u. Peiper, H.	210	experimental botulinus, histo-	
Pellagra	516, 517	logical study of central nerv-	
Pelvic pain, chronic, in relation to		ous system in.....	296
neurasthenia	550	food, death from due to bacillus	
Pemberton, J. de J.....	169	botulinus	294
Pende, N.	407	Poliomyelitis, acute	72, 77
Pendergrass	72	anterior.	73
Penfield, Wilder	505	and epidemic encephalitis,	
Perceptions, spatial, rôle played		note on comparative his-	
by cutaneous senses in.....	*585	topathology of	77
Pereira, J. R.....	520	contagiousness of	73
Péres, M.	*227	differential diagnosis of....	72
Pereyra, E. Portu.....	679	painful form of	72
Periarterial nerves	655	pre-paralytic, diagnosis of....	75
sympathectomy for trophic ul-		Polydipsia in epidemic enceph-	
cerations of extremities.....	514	litis	533
Peripheral vascular mechanism..	653	Pons, disease of.....	281
Périsson, Joseph	211	large tubercle of, in typical	
Péron, Jean-Noël	447	post-encephalitic Parkinson-	
Personality analysis	100, 577	ism	664
development, rumination in re-		Pontile and medullary syndromes.	*355
lation to	*245	Pophal, R.	92
dual	705	Poppelreuter, W.	565
Perversions, sexual, and tattooing	192	Porter, C. A.	173
Petrén, Karl	322	Post-encephalitic bradykinesia ..	289
Pettingell, O. S.....	196	deformities of motion	286
Petzetakis, M.	654	Parkinsonian and adipose-geni-	
Pfister, O.	98	tal syndrome	291
Physostigmin and pituitary ex-		syndrome	636
tract on isolated human ver-		Parkinsonism	181, 531
miciform appendix	524	treatment of	418
Piaget, Jean	705	respiratory syndrome	636
Pierce, Lydia B.....	516	syndromes, auto-injections in..	292
Pieron, H.	412	Postural activity	663
Pigment formation of actino-		influence of sympathetic nerv-	
therapy	410	ous system	522
Pilcz, Alexander	444, 580	Potet, M.	444
Pineas, Hermann	179	Pototzkv, C.	527
Piney, A.	656	Pötzl, Otto	101
Pires de Lima, J. A.....	516	Pratt, George K.	302
Piticariu, I.	292	Pregnancy, phantom	190
Pituitary and thyroid glands,		Prentiss, A. M.....	416
treatment of climacteric con-		Pressey, Luella Cole.....	207
ditions by X irradiation of..	661	Pressey, Sidney L.....	207
extensive hemorrhage into in		Priapism, idiopathic	76
case of lethargic encephalitis	415	Prideaux, E.	197
extract and physostigmin on		Primitive man and environment..	89
isolated human vermiform ap-		Prinzhorn, Hans	434
pendix	524	Prisoners' pictures	434

- Progressive lenticular degeneration 79, 179
 Protopathic sensibility of the skin 514
 Prudden, Lillian E. 572
 Prudden, T. Mitchell..... 572
 Pseudoparalysis and congenital lues 682
 Pseudosclerosis of Wilson..... 539
 Pseudotumor in psychoses..... 677
 Psyche and involuntary nervous system 551
 and menstruation 194
 and nervous diseases..... 323
 relation of to vegetative nervous system 99
 Psychiatry 206
 and endocrinology *15
 clinical, and psychoanalysis.... 694
 folk lore in 322
 progress in 695
 textbook of 444
 Psychic deafness 555
 disturbances, physician as cause of 549
 Psychically ill, attention and comprehension with 565
 Psychoanalysis 99, 437, 448, 567
 active therapy in 567
 and clinical psychiatry 694
 and sexual science..... 434
 and Yoga 703
 in cure of asthma..... 683
 lectures on 719
 of case of nervous asthma.... 313
 study and criticism of..... 581
 technic of 438
 theory and technique of..... 571
 Psychoanalytic Clinic, Berlin.... 436
 findings, reliability of..... 192
 Psychogalvanic reflex, emotion in mental disorder as shown by 197
 Psychological medicine 442
 understanding 438
 Psychology, abnormal 100
 and pathology of optic perception 565
 animal 699
 child, introduction to..... 93
 mass 435
 medical 97
 of exceptional epileptic states.. 196
 of gestalt 440
 organic 321
 Psychoneuroses, basal metabolic rates in 86
 endocrines in 554
 value of combining methods of treatment in 393
 Psychoneurosis 84
 Psychopathology of conditions following encephalitis epidemica 289
 of "normal" families..... 192
 of tuberculosis 318
 Psychopathy, traumatic 88
 Psychophysical interaction 200
 Psychoses, chronic hallucinatory. 59
 functional, as an evolution of psychic impotency *105
 pathology of epidemic encephalitis complicated by..... 286
 with hydrocephalus, meningitis serosa, brain tumor and pseudotumor. 677
 Psychosis and neurosis..... 198
 functional, as a development of psychosexual impotency.... 260
 in filiariasis 697
 Psychotherapy 93
 and the vegetative nervous system 207
 Psychotics, tonus among..... 698
 families of 195
 Psychotraumatic dysmenorrhea .. 433
 Public welfare administration in United States 574
 Puerperal insanity 697
 Pulse pressure in exophthalmic goiter 171
 Purpura with ventricular hemorrhage 679
 Putnam, T. J. 283
 Pylorospasm, fate of children with 524
 Pylorus, reflex control of..... 524
 Pyramidopallidal syndrome, and arteriosclerotic rigidity 539

RACE and constitution..... 191
 Rachitis 447
 Rademaker, G. G. J. 663
 Radiation in brain tumors..... 153
 Radiotherapy and Goetsch's test in affections of thyroid gland 178
 Radium, effect of on normal tissues of brain and spinal cord of dogs 72
 emanation, lesions of corpus striatum by 671
 Rambo 72
 Rami communicantes, section of. 408
 Ramisection, sympathetic 273
 Ramos, Arthur 322
 Rank, Otto 436
 Rasdolsky, I. 270
 Rasmussen, A. T. 281
 Ratner, J. 646
 Raynaud's disease, organotherapy in 651
 syndrome in infants..... 651

Rays, action of upon vegetative system	411	Rombouts, J. M.	184
Rebierre, P.	538	Röntgen-irradiation in syringomyelia	76
Rectal movement and thyroid	525	treatment of exophthalmic goiter	176
Red nucleus	663	Röper, E.	88
Redlin, G.	524	Rosen, H.	698
Reference, ideas of	573	Rosenow	183
Reflex and sensory phenomena with surgical disease	270	Rosenthal, K.	672
conditioned	318	Rosenthal, Oscar	208
control of pylorus	524	Roth, O.	69
oculocardiac, and heart block	654	Rother, J.	265, 411
in respiratory diseases	652	Rotman, D. B.	286
with goiter	65	Rousselot, G.	277
psychogalvanic, emotion in mental disorder as shown by	197	Rowe, A. H.	167
solar	264	Rowe, A. W.	517
Reflexes	94	Rowland, A. F.	526
abdominocardiac, from surgical standpoint	271	Royle, N. D.	273, 277
carotid pressure	652	Rubro-spinal tract, marchi method	663
conditioned	551	Rumination in relation to personality development	*245
theory of in relation to their developmental history and to anatomy and physiology	94	Rusdea, N.	544
Reflexology	702	SABRAZÈS, J.	414
Religion and morbid mental states	90	Sachs, E.	664
Religious faith	436	Sainté Marie	414
Reminiscences	445	Salmon, A.	414
Renal function in patients with retinitis and high blood pressure	527	Salmon, Thomas W.	393
Renaud, M.	417	Salomon, A.	541
Rennesse, H. v.	77	Samuelson, Estelle E.	435
Rennick, Charles F.	519	Sands, Irving J.	44
Respiratory and sleepless forms of encephalitis	184	Santenoise	264
diseases, oculocardiac reflex in syndrome, post-encephalitic	636	Sauer, W.	291
Retinitis and high blood pressure, renal function in patients with	527	Savage, G. C.	91
Reuben, M. S.	660	Scarlatiniforme, erythema, in epidemic encephalitis lethargica	414
Rhinologic observations with speculation concerning involuntary nervous system	410	Scarlet fever, white dermatographism in	411
Rhinorrhea and epiphora	516	Schaller	280
Richet, C., Jr.	180	Schiff-Wertheimer, Suzanne	700
Right and left handedness, statistics on	315	Schilder, diffuse periaxial encephalitis of	297
Riley, H. A.	321	encephalitis periaxialis of	297
Rio-Hortega, P. Del.	505	Schilder, P.	196
Riser	*227	Schilf, Erich	203
Rivers, W. C.	206	Schirmer, O.	419
Rivers, W. H. R.	433	Schizophrenia, certain prepotent notions in	158
Robin	276	libido conflict in case of	695
Roch, M.	520, 528	Schmitz, Oscar A. H.	703
Roentgen rays and vegetative system	265	Schneider, K.	88
Roffenstein, Gaston	438	Schoenholz, P.	296
Rogers, F. T.	280	Schohaus, Willi	437
Roheim, G.	89	Schorer, G.	651
		Schoq, H. I.	90
		Schwarz, E.	73
		Scleroderma, metabolism in	517

- Sclerosis, combined, of spinal cord, etiologic relation of
 achylia gastrica to..... 73
 disseminated 74
 experimental transmission of. 74
 pathogenesis of 77
 multiple 637
 case with unusual symptom. 624
- Scopolamin, effect of, sleep and encephalitis lethargica 291
- Searl, M. N. 314
- Seidemann, W. 296
- Seletzky, W. 420
- Senses, cutaneous, rôle of in spatial perceptions *585
- Sensitization of small area of skin 411
- Sensory and reflex phenomena with surgical disease..... 270
- Serejski, M. *15
- Serum calcium and mind..... 432
- Sex organs, skin of and sensibility three contributions to the theory of 578
- Sexual perversions and tattooing. 192
- science and psychoanalysis..... 434
- Sexuality and asthma..... 551
- Shaw, Joseph C. 308
- Shrubsall, F. C. 421
- Silvestri, T. 181
- Simpson, Sutherland 165
- Sinus disease, septic..... 678
- thrombus 441
- Skin and muscular tonus..... 412
- exposed to ultra-violet rays, sense of pain in..... 515
- of sex organs and sensibility.. 412
- protopathic sensibility of..... 514
- v. Skramlik, Emil..... 325
- Slavery 204
- Sleep and inhibition..... 83
- encephalitis lethargica and effect of scopolamin..... 291
- irritability during 431
- natural position in..... 196
- pleasure in and disturbed capacity in 684
- Sleeplessness, control of..... 302
- Sluder, Greenfield 410
- Style 206
- Smell and taste..... 325
- Smith, A. L. 654
- Smith, E. C. 529
- Smith, F. J. 274
- Social approach to neurotic conditions *601
- Society and the individual..... 575
- Söderbergh, G. 539
- Sodium salicylate in epidemic encephalitis 390
- Solar plexus, plexiform neurofibroma of 269
- reflex 264
- Sørensen, S. T. 72
- Souques, A. 292
- Sourkoff, A. 646
- Spasm, vascular, edema from... 651
- tetanoid and tetaniform, in epidemic encephalitis 665
- Spatz, H. 668
- Speech, disorders of..... 568
- Speidel, C. C. 71, 656
- Sperm, treponema pallidum in... 681
- Sphenopalatine ganglion neurosis 431
- Spinal cord, compression of.... 76
- diseases of 444
- etiologic relation of achylia gastrica to combined sclerosis of 73
- hemorrhage in resulting from overexertion. 78
- fluid sugar 416
- metastasis of hypernephroma... 75
- Staehelin, J. E. 289
- Stallybrass, C. O. 529, 537
- Stanhope, A. H. 196
- Starkey, F. R. 545
- Stekel, Wilhelm 434, 440
- Stephenson, Junius..... 499
- Stenström, N. 67
- Sterling, W. 300, 665
- Stern, F. 528
- Sternheimer, R. 269
- Stern-Piper, L. 684
- Stieffler, G. 529
- Stier, Ewald 205
- Stone, Theodore T. *595
- Strausz, O. 411
- Striatal syndromes and liver... 180
- with congenital brain disease 179
- Striate body and thalamus in infants 180
- Strindberg 294
- Strominger, L. 551
- Stuporous condition, periodic, with anatomical basis..... 670
- Subcommissural body 99
- Substantia nigra and extrapyramidal motor system..... 668
- and globus pallidus, comparative anatomical investigations on connections between 180
- connections of pars suboculomotoria of 501
- Sucking habits of children..... 87
- Sudeck 171
- Sudhoff, Karl 699
- Sugar content of cerebrospinal fluid in lethargic encephalitis 300
- Suggestive treatment 86
- Sullivan, Harry Stack..... 158
- Sullivan, James C. 76
- Superstition 204

- Suprarenal deficiency and neurasthenia 316
hormone and intestines 524
Sylvius, avarice of..... 431
Symbolism, theory of..... 315
Sympathectomy 271
cervical, for relief of angina pectoris 274
electrocardiogram after 274
periarterial, for trophic ulcerations of extremities..... 514
Sympathetic, cervical, function of as manifested by its action currents 273
disturbances in the hemiplegic innervation and heat production in skeletal muscles..... 520
nerve, muscular atrophy after resection of 522
nervous system, postural influence of 522
surgery of 269
ramisection 273
and muscle tone..... 277
sensitivity of to anesthetics... 278
surgery of 264
system 442
and metabolism 265
relation to dermatoses..... 514
Synthymia 190
Syphilis, treatment of with bismuth preparations 682
Syringomyelia and haematomyelia 74
röntgen-irradiation in 76
Syz, Hans C.....*601
Szyzska, W. 292
- T**ABES dorsalis, deep pain sense in 499
Tachycardia, paroxysmal, with multiple foci of stimulus production 655
Taft, A. E.*217
Tarnanceanu 178
Taste and smell..... 325
Tattooing and sexual perversions 192
Tchougounoff, S. 646
Tecto-spinal fasciculus in the cat 281
Teige, K. 179
Tello, J. F..... 639
Thalamus and striate body in infants 180
Thalbitzer, S. 202
Thinking, rigorous, human worth of 435
Thomas, André 281, 283
Thomas, E. 65
Thompson, Howard K..... 647
Thymergastic reactions 393
- Thyroid and motility of intestines 523
and pituitary glands, treatment of climacteric conditions by X irradiation of..... 661
and rectal movement..... 525
cancer of 70
disease, metabolism in..... 167
effect of on eye of frog tadpole 71
extract, treatment of pernicious anemia with 64
gland 326
effect of iodine on..... 168
experimental study of mitochondrial changes in.... 69
gas exchange in diseases of.. 177
Goetsch's test and radiotherapy in 178
influence of intestinal bacteria on 168
iodine treatment in diseases of 171
mitochondria content of as index to activity of gland..... 170
origin, asthma of..... 172
structure of in man..... 69
surgery, analysis of end-results in 173
transplantation, treatment of hypothyroidism by 174
treatment of eczema..... 174
tuberculous, with exophthalmic goiter 67
Thyroidectomy, effects of in sheep 165
Thyrotoxicosis, secondary operations for 67
Tics in encephalitis..... 419
Tietz, L. 645
Tilney, Frederick 149
Tinel, J. 651
Tobacco and cerebral functions.. 549
Tomasson, H. 432
Tonus among psychotic..... 698
in man, induced variations in.. 544
Toomey, Dembo 187
Torsion dystonia and athetosis duplex 672
Tournade 524
Transference and choice of an object 428
Traumatic neuroses 205
psychopathy 88
Tremors, registration of in Graves' disease 67
Trentzsch, Philip John.....*245
Treponema pallidum in sperm... 681
Trömner, E. 423
Tubercle, intercolumnar 283
Tuberculosis in mental disease... 698
psychopathology of 318
Tuberculous thyroid, with exophthalmic goiter 67

- Tumor, brain, in psychoses..... 677
 mental troubles in..... 571
 radiation in 153
 pituitary, with coma..... 44
 Turpin, R. 523
- U**
 UGON, A. A..... 183
 Ulcerations, trophic, of ex-
 tremities, periarterial sym-
 pathectomy for 514
 Ultraviolet radiations in condi-
 tions of extreme calcium and
 phosphorus deficiency 265
 ray treatment of goiter..... 172
 sense of pain in skin exposed
 to 515
 Unconscious, constituents of..... 301
 Urechia, C. I..... 297, 539
 Urechia, C. J..... 544
 Urticaria pigmentosa in adults... 513
 Uvula, weakness of after enceph-
 alitis 422
- V**
 VACCINATION, antityphoid,
 in Parkinson syndrome 417
 nervous and mental complica-
 tions of 277
 Vagus in chronaxia in the heart. 654
 Valerian, nervous and mental
 manifestations following pro-
 longed use of..... 640
 Valerio, A. 271
 Valière-Vialeix, V. 326
 Vampré, Enjolras 64
 Van Dam, E. 83
 Vanderhoof, D. 73
 Van Gehuchten, A. 441
 Van Gogh 204
 Van Loon, F. H..... 698
 Varicella, with acute hemorrhagic
 nephritis and acute hemor-
 rhagic encephalitis following
 it 531
 Vascular spasm, edema from.... 651
 Vegetative innervation 407
 nervous system 277
 action of rays upon..... 411
 and lipoids 269
 and lymphatism 279
 and roentgen rays 265
 Veil 654
 Ventriculography in diagnosis of
 central nervous system..... 210
 Verger, H. 180, 665
 Vigneul 289
 Villela, E. 419
 Vinchon 195
 Virchow and humoral pathology. 642
 Virus, encephalitogenic, an exotic
 strain of 413
 herpetic strains of 413
 Visual field studies 323
 Vollmer, H. 656
- W**
 WAGNER-JAUREGG, J. ... 167
 Wahlberg, J. 177
 Waldorp, C. P..... 65
 Wallace, S. W..... 526
 Walshe, F. M. R..... 79
 Warkany, J. 180
 Warthin, A. S..... 512
 Washington Society for Nervous
 and Mental Diseases..... 158, 259
 Watkins, A. B. K..... 676
 Weaver, J. Calvin..... 278
 Weber, F. Parkes 268
 Wechsler, I. S..... 624
 Weil, Arthur 621
 Weinberg, A. A..... 551
 Weiss, E. 313
 Wells 206
 Wenger, E. 565
 Wertheimer 408, 664
 West, O. J..... 642
 Westphal, A. 78
 Wexberg, Erwin 574
 Wheat, S. D..... 280
 White dermographism in scarlet
 fever 411
 Whiteman, R. T..... 294
 Widal, F. 172
 Wiedhopf, O. 278, 279, 655
 Wiesel, J. 652
 Wildermuth, Hans 576
 Wilhelmj, C. M..... 660
 Wilkinson, E. A..... 294
 Williams, Leonard 301
 Williamson, G. S..... 69
 Willius, Fredrick A. 655
 Wilson, S. A. Kinnier..... 79, 98
 Wilson's disease and paralysis
 agitans 179
 pseudosclerosis 539
 Wimmer 179
 Winkelman, N. W..... *1, *133
 Winstel, A. 412
 Wittels, Fritz 203
 Wodak, Ernst 701
 Wolff, A. 646
 Woltman, Henry W..... 691
 Worms, G. 295
 Woröbiew, W. 208
 Worry, nervous element in..... 88
 Wright, H. W..... 555
 Wright, Jonathan 564
 Writer's cramp, psychogenesis of 309
- Y**
 YOGA and psychoanalysis..... 703
 Yoshimura, Kisaku 522
 Yow, C. W..... 532
- Z**
 ZACKS, D. 196
 u. Zdansky, E. 530
 Zamkin, H. O..... 660
 Zeehandelaar, J. 207
 Ziehen 562

N. B.: See Index of Journal of Nervous and Mental Disease: Vols. 1-50
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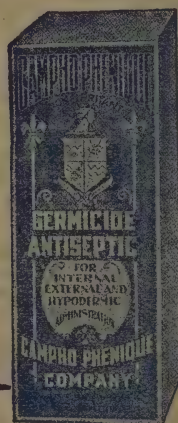
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TABLE OF CONTENTS

ORIGINAL ARTICLES

The Role Played by the Cutaneous Senses in Spatial Perceptions. By William Malamud, M.D.	585
Amyotrophic Syphilitic Meningomyelitis: Report of Two Cases with Argyll-Robertson Pupils. By Theodore T. Stone, M.D.	595
On a Social Approach to Neurotic Conditions. By Hans C. Svyz, M.D.	601
Familial Form of Encephalitis Periaxialis Diffusa. By Armando Ferraro, M.D.	617

SOCIETY PROCEEDINGS

New York Neurological Society	621
Comparative Studies of the Surfaces of Endocranial Casts of Man and Prehistoric Man; A case of Multiple Sclerosis with an Unusual Symptom; Two Cases Characterized by Involuntary Movements; Visceral Disorders Associated with Dystonia Musculorum in Epidemic Encephalitis.	
The Missouri-Kansas Neuropsychiatric Society	637
Post-encephalitic Respiratory Syndrome: Post-encephalitic Parkinsonian Syndrome; A Case for Diagnosis: The Military Significance of Common Mental Disorders.	

CURRENT LITERATURE

HEREDITY: HISTORY, GENERAL NEUROLOGICAL PROBLEMS, ETC.

Tello, J. F., Neuron Differentiations in Embryo Chicks During the First Days of Incubation (639); Gordon, Alfred, Nervous and Mental Manifestations Following a Prolonged Use of Valerian (640); Basset, Molière and the Doctors (641); Greil, A., Mendel's Laws and the Physician (641); Cramer, N., Innervation as Factor in Experimental Production of Cancer (642); Freund, H., Virchow and Humoral Pathology (642); West, O. J., Is Pathologic Nomenclature Either Scientific or Sensible? (642); Mills, George W. T., A Report on Some Heredity Status (643); Apert, E., Laws of Heredity (644).
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I. VEGETATIVE NEUROLOGY

- 1. Vegetative Nervous System:** Barkman, A., A Case of Dystrophia Myotonica (644); Allaben, G., Two Cases of Amyotonia Congenita Occurring in the Same Family (644); Eddy, N. B., The Action of Preparations of the Endocrine Glands upon the Work Done by Skeletal Muscle (645); Tietz, L., Grave Pseudoparalytic Myasthenia (645); Cuno, F., Juvenile Muscle Atrophy an Avitaminosis (645); Looney, Joseph, The Relation Between Increased Muscle Tension and Creatine (645); Golant-Ratner, R., and Ratner, J., Neuromuscular Apparatus and Vegetative Innervation (646); Wolff, A., Myasthenia Gravis and Ovarian Deficiency (646); Tchougounoff, S., and Sourkoff, A., The Pathogenesis of the Clinical Varieties of Achondroplasia (646); Léry, A., and Linossier, Mlle., Congenital Achondroplasia (646); Thompson, Howard K., The Endocrine Element in Arthritis (647); Goering, D., The Influence of the Nervous System on Bones and Joints (648); Cecil, Russel, and Archer, B. H., Arthritis of Menopause (648); Kylin, E., High Blood Pressure (650); Schorer, G., Edema from Vascular Spasm (651); Claude, H., and Tincl, J., Organotherapy in Raynaud's Disease (651); Dupérier, Raynaud's Syndrome in Infants (651); Hering, H. B., Carotid Pressure Reflexes (652); Wiesel, J., Vessel Pains and Hypertension in the Menopause (652); Galup, J., Oculo-Cardiac Reflex in Respiratory Diseases (652); Danzer, C. S., The Peripheral Vascular Mechanism (653); Smith, A. L., Cardiac Irregularities (654); Lapicque and Veil, The Vagus in Chronaxia in the Heart (654); Petzetakis, M., Oculocardiac Reflex and Heart Block (654); Wiedhopf, O., Periarterial Nerves (655); Willis, F. A., Paroxysmal Tachycardia (655); Vollmer, H., Blood Chemistry under Stimulation of the Vagus (656); Piney, A., The Nucleated Red Cells in Pernicious Anemia (656); Jordon, H. E., and Speidel, C. C., Studies on Lymphocytes (656).
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- 6. Encephalitis:** Ayres, Octavio, Epidemic Encephalitis (665); Verger, H., Unilateral Bradykinesia (665); Sterling, W., Tetanoid and Tetaniform Spasms in Epidemic Encephalitis (665); Bramwell, E., Mental Sequelae of Encephalitis Lethargica (665); Krebs, E., Involuntary Movements in Epidemic Encephalitis (667); Cloake, P. C. P., Mental Sequelae of Encephalitis (667).
- 7. Basal Ganglion:** Bing, R., Chorea and Athetosis (668); Spatz, H., Substantia Nigra and the Extrapyramidal Motor System (668); Byszowsky, G., Periodic Stuporous Condition with Anatomical Basis (670); Edwards, D. J., and Bagg, H. J., Lesions of the Corpus Striatum by Radium Emanation (671); Camp, C. D., Chorea and Choreiform Affections with Special Reference to Etiology (671); Rosenthal, K., Torsion Dystonia and Athetosis Duplex (672).
- 8. Tests, Reflexes, Symptoms:** Levaditi, C., Neurotropic Ectodermatoses (672).
- 9. Meninges:** Berghausen, Oscar, Significance of Meningeal Reactions (675); Watkins, A. B. K., Case of Meningeal Hemorrhage (676); Burhans, C. W., and Gerstenberger, H. J., Internal Hemorrhagic Pachymeningitis in Infancy (676).
- 10. Brain:** Blumenthal, K., Psychoses with Hydrocephalus (667); Milligan, W., Diagnosis of Septic Sinus Disease (678); Pereyra, E., Portu, Purpura with Ventricular Hemorrhage (679); East, C. F. T., Cerebral Hemorrhage in the Newborn Child (679).
- 11. Neurosyphilis:** Lakaye, R., Treponema Pallidum in Sperm (681); Hearn, R., Treatment of Neurosyphilis (681); Bouman, L., Congenital Lues and Pseudo-paralysis (682); Marie, Bouttier and Iorgulesco, Benzoin Test in Neurosyphilis (682); Block, B., Treatment of Syphilis with Bismuth Preparations (682).

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- 1. Psychoneuroses; Psychology; Psychoanalysis:** Moose, E., Causal Psychotherapy in Asthma (683); Gordon, R. G., and Carleton, H. H., Hysterical Pain (683); Stern-Piper, L., Kretschmer's Psychophysical Types (684); Kahn, P., Hysteria (684); Eisler, M. J., Pleasure in Sleep and Disturbed Capacity to Sleep (684); Alexander, F., The Castration Complex (686).
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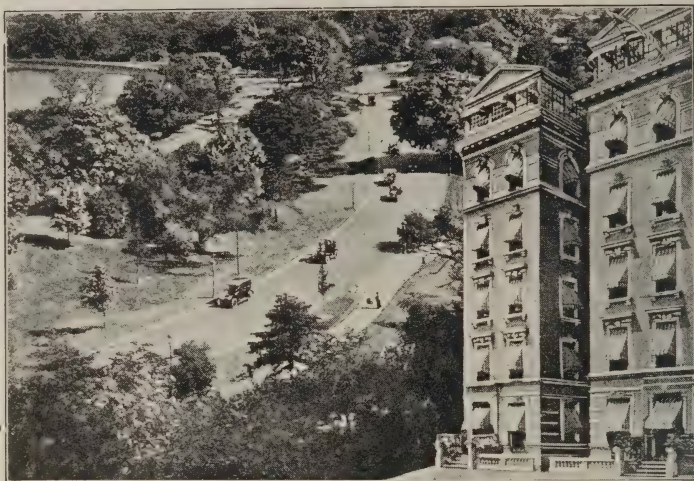
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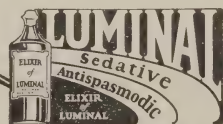
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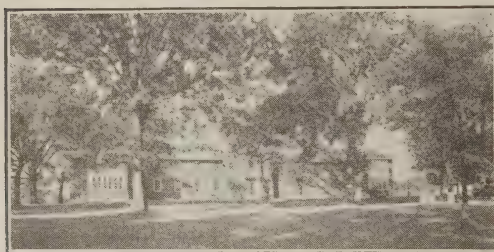
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Consult this Directory for Private Institutions

DIRECTORY FOR PRIVATE INSTITUTIONS

Anderson, Christian S., Hot Springs, Va.....	19
Anderson, Dr. P. V., Richmond, Va.....	12
Anderson, Dr. V. V., Staatsburg-on-Hudson, N. Y.....	19
Barnes, Dr. F. H., Stamford, Conn.....	12
Beacon School, Summit, N. J.....	6
Belle Mead Farm Colony and Sanatorium, Belle Mead, N. J.....	6
Blythwood, Inc., Greenwich, Conn.....	10
Boulden, Dr. Geo. P., Belle Mead, N. J.....	6
Bournewood, Brookline, Mass.....	14
Bowden House, Harrow-on-the-Hill, England.....	21
Brooks, Dr. Swepson J., Rye, N. Y.....	20
Brown, Dr. Sanger, Kenilworth, Ill.....	13
Brunswick Home, Amityville, L. Is.....	16
Caples, Dr. B. H., Waukesha, Wis.....	16
Capron, Dr. A. J., Owego, Tioga Co., N. Y.....	14
Carroll, Dr. R. S., Asheville, N. C.....	18
Cavender, Dr. W. M., Staatsburg-on-Hudson, N. Y.....	19
Channing Sanitarium, Wellesley, Mass.....	6
Chicago Sanitarium, Chicago, Ill.....	21
Cincinnati Sanitarium, Cincinnati, Ohio.....	11
Cook, Dr. R. H., Oxford, Ohio.....	15
Cottrell, Dr. S. S., Mamaroneck, N. Y.....	10
Crest View, Wyncote, Penn.....	21
Crichton-Miller, Dr. Hugh, Harrow-on-the-Hill, England.....	21
Dr. Denniston's Sanitarium, Point Pleasant, N. J.....	14
Dold, Dr. William Elliott, River Crest, Astoria, L. I., New York City.....	16
Easton Sanitarium, Easton, Pa.....	19
Fair Oaks, Summit, N. J.....	12
Gayle, Dr. E. M., Richmond, Va.....	12
Gayle, Dr. R. F., Richmond, Va.....	21
Glenmary Sanitarium, Owego, Tioga Co., N. Y.....	14
Gregg, Dr. Donald, Wellesley, Mass.....	6
Hall, Dr. J. K., Richmond, Va.....	12
Hammond, Dr. William J., Westwood, Mass.....	13
Hartford Retreat, Hartford, Conn.....	12
Highland Hospital, Asheville, N. C.....	18
Hoyt, Dr. Harold E., Riverdale, N. Y.....	19
Humphries Hospital, Mamaroneck, N. Y.....	10

(Continued on page XVII)

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Directory for Private Institutions—Continued from Page XV

Idylease Inn, Newfoundland, N. J.....	20
Interpines, Goshen, N. Y.....	18
Ireland, Mrs. E. C., Wyncote, Penn.....	21
Kellogg, Dr. T. H., Riverdale, N. Y.....	20
Kenilworth Sanitarium, Kenilworth, Ill.....	13
Kidd, Dr. R. A., Columbus, O.....	18
Livermore Sanitarium, Livermore, California.....	11
Lloyd, Dr. Henry W., Riverdale, N. Y.....	10
Magnus, Dr. A. B., Chicago, Ill.....	21
Markham, Dr. C. L., Amityville, L. Is.....	16
McFarland, Dr. D. W., Green's Farms, Conn.....	20
McIntosh, Dr. J. A., San Antonio, Tex.....	16
McMillen Sanitarium, Columbus, O.....	18
Milwaukee Sanitarium, Wauwatosa, Wis.....	6
Moody, G. H., Dr. Moody's Sanitarium, San Antonio, Tex.....	16
Moody, T. L., San Antonio, Tex.....	16
Neuron Hurst, Dr. W. B. Fletcher's Sanatorium, Indianapolis, Ind.....	20
Norbury Sanitarium, Dr. F. P. Norbury, Jacksonville, Ill.....	14
Oconomowoc Health Resort, Oconomowoc, Wis.....	14
Orchards, Stamford, Conn.....	20
Oxford Retreat, Oxford, Ohio.....	15
Palmer, Mrs. Elsa Y., Summit, N. J.....	6
Podstata, Dr. V. H., Livermore, California.....	11
Potter, Dr. C. A., Goshen, N. Y.....	18
Priddy, Dr. Hugh W., Memphis Tenn.....	12
Prout, Dr. T. P., Summit, N. J.....	12
Psychoanalytic Institute, Stamford, Conn.....	20
Quayle, Dr. Chas. H., Dr. Quayle Sanitarium, Madison, Ohio.....	16
Rees, J. Rawlings, Harrow-on-the-Hill, England.....	21
River Crest, Astoria, L. I., New York City.....	16
Robinson, Dr. G. W., Kansas City, Mo.....	11
Rogers, Dr. A. W., Oconomowoc, Wis.....	14
Rounsefell, Dr. Clifford G., Wellesley, Mass.....	6
Ruland, Dr. F. D., Westport, Conn.....	18
Scott, Dr. E. A., Goshen, N. Y.....	18
Seguin School, Orange, N. J.....	13
Seward, F. W., Goshen, N. Y.....	18
Sleyster, Dr. Rock, Wauwatosa, Wis.....	6
Spink, Dr. Mary A., Indianapolis, Ind.....	20
Spruces, Staatsburg-on-Hudson, N. Y.....	19
Strohm, Miss Augusta, New York City.....	17
Thompson, Dr. W. N., Hartford, Conn.....	12

(Continued on page XXI)

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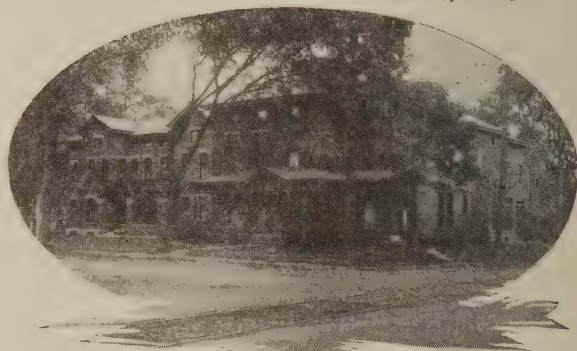
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Directory for Private Institutions—Continued from Page XVII

Torney, Dr. G. H., Brookline, Mass.....	14
Towns, Charles B., Hospital, New York City.....	8
Tucker Sanatorium, Richmond, Va.....	21
Uniker, Dr. T. E., Stamford, Conn.....	20
Vessie, Dr. P. R., Greenwich, Conn.....	10
Virginia Hot Springs, Hot Springs, Va.....	19
Wallace Sanatorium, Memphis, Tenn.....	12
Wallace, Dr. Walter R., Memphis, Tenn.....	12
Waukesha Springs Sanatorium, Waukesha, Wis.....	16
West Hill, Riverdale, N. Y.....	19
Westbrook Sanatorium, Richmond, Va.....	12
Westport Sanatorium, Westport, Conn.....	18
Westwood Lodge, Westwood, Mass.....	13
Wetmore, Dr. S. S. P., Easton, Pa.....	19

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